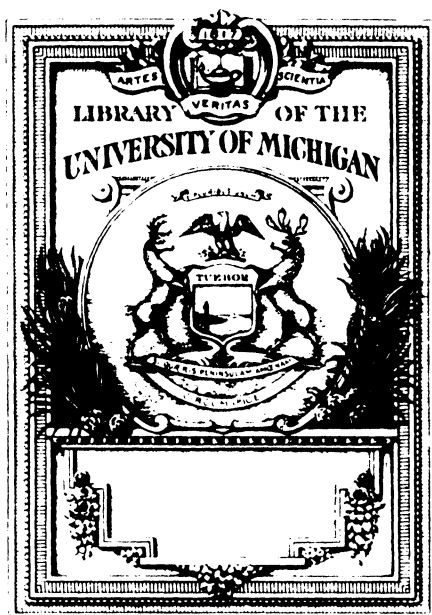


B 49664 8

PHILIPPINE  
ISLANDS  
—  
HEALTH  
SERVICE  
MONTHLY  
BULLETIN  
—  
7-8  
1927-28







614.09914

P55

H43m







THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

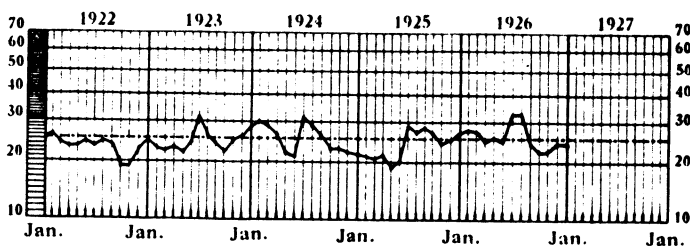
JANUARY, 1927

No. 1

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germes, says the United States Public Health Service, are usually a hand to mouth affair. Better wash up.

ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



.....Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1927

## PHILIPPINE HEALTH SERVICE

### COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

### TABLE OF CONTENTS

	Page
Studies on the Serology of Leprosy, by W. H. WADE.....	3
Sanitary Engineering in Small Towns in the Provinces, by M. MAÑOSA .....	7
Resolution of the Committee on Cancer of the P. I. Medical Associa- tion .....	19
Miscellaneous .....	20
General Statistics .....	

Hygiene

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VII**

**JANUARY, 1927**

**No. 1**

**STUDIES ON THE SEROLOGY OF LEPROSY**  
**II. NITRIC-ACID PRECIPITATION (BRUCK,**  
**MODIFIED)**

**By H. W. WADE, M.D.**

*From the Pathological Section, Culion Leper Colony  
Philippine Health Service, Culion, Palawan, P. I.*

[An abstract]

Investigations on the serology of leprosy have, until recently, had to do with attempts to develop a specific reaction and with the occurrence of the Wassermann reaction in this disease. The former problem is most difficult, for one thing because of the close relationship of the acid-fast bacteria in general and the frequency of infection by one of them, tuberculosis; and for another thing, the apparent non-cultivability of the organism. A practical specific diagnostic test for leprosy seems to be not yet in sight. The Wassermann reaction has not proved of any direct value in this infection. In spite of the general idea that this reaction is frequently positive, it has now been found negative by refined technics in the ordinary phases of the disease, and is useful only in connection with complicating treponematos infections. This matter is discussed in the first paper of this series (Pineda and Roxas-Pineda).

The importance of arriving at a diagnostic, or at least a presumptive, test for leprosy is obvious. There is urgent need of a test for the diagnosis of leprosy infection in suspected cases, and particularly in contacts of known cases in order that by treatment latent infections may be aborted and that may be used as a gauge of improvement in cases under treatment and

for determining the cure in negative cases. In view of the unusual difficulties involved, the serology of leprosy should be studied from various angles in the hope of arriving at such a test.

The unusual tendency, to give the Wassermann reaction with ordinary technics, indicates that there is some unusual abnormality in lepers' sera. There are reports that indicate that such sera react very regularly to certain non-specific tests that apparently depend on globulin increase (fermol coagulation, distilled-water precipitation). Such a test is the nitric-acid precipitation reaction of Bruck, which has apparently not been applied previously in leprosy. The findings in 100 sera of lepers, with those in 16 non-leprous control sera, are the subject of this paper.

#### NATURE OF THE TEST

This test is a comparatively simple one, involving the addition of a carefully measured amount of a strong solution of nitric-acid to a certain amount of serum which has been moderately diluted. A precipitate occurs in all sera. After a given time, this solution is diluted with a comparatively large amount of distilled water. With normal sera, this dilution is sufficient to cause complete solution of the acid precipitate; but with abnormal sera, the solution is not complete. The degree of reaction is determined by the amount of undissolved precipitate after sedimentation.

The test was originally proposed by Bruck for the diagnosis of syphilis under war conditions. It was found unsuitable for this purpose because it was inconstant in syphilis and not infrequent in other conditions.

#### RESULTS IN LEPROSY

Of the 100 lepers' sera, 71 gave strong or very strong reactions 29 moderate or weak and none was negative. Considering the cases on the basis of treatment, we found that there were decided differences in the distribution as regards degree of reaction. Of the newly arrived cases, not yet under anti-leprosy treatment, a relatively large proportion (44 per cent.) gave very strong reactions, and only 11 (23 per cent.) were moderate or weak. Of the cases under treatment, only three (seven per cent.) were in the very strong category, and 19 (44 per cent.) moderately or only weakly positive.

Ten of the 100 cases were on the "negative list" and were Wassermann-negative. The degree of reaction in these cases



was fairly similar to that in the treated group as a whole, showing that the reaction does not tend to become negative rapidly in such patients.

The Wassermann reaction was positive in 21 of these sera in some degree, apparently because of yaws or syphilis, as a rule. The degree of reaction in these cases indicates that the coincidence of these infections with leprosy tends to increase the amount of precipitate, but that this increase is not marked.

Of the sera from non-lepers, eight were from the professional staff. Only three of these non-lepers were actually negative, though none was classed as strongly positive. Of the eight sera from laborers, none was negative and only two were as low as "weak". In none of these non-lepers was the Wassermann reaction positive. From these findings, one may doubt that a weakly positive reaction necessarily signifies the existence of a pathological condition.

In spite of this fact it is evident that there is, as a rule, a decided change in the serum in leprosy. The differences in the figures for treated and untreated cases indicate that treatment tends to reduce the abnormality on which this reaction depends. These are the only points of interest so far as leprosy is concerned. The reaction is, of course, not specific and merely indicates an abnormality common to various diseases. Such information can probably be secured by other methods that are superior, either because simpler and so less time-consuming and less liable to technical variation, or because the results are more precise.



# **SANITARY ENGINEERING IN SMALL TOWNS IN THE PROVINCES <sup>1</sup>**

By **M. MAÑOSA**  
*Sanitary Engineer, P.H.S.*

The most logical way of developing the subject given to me, I think, is to define first what it meant by "sanitary engineering" in order to point out thereby the particular field of the sanitary engineer in connection with the distinct application it has to our provincial conditions.

In the words of Professor Phelps, (1) "public health engineering" is "the art of directing the forces and activities of nature to the prevention and improvement of the public health." It should be noted that in this definition the expression "sanitary engineering" has been changed to "public health engineering" not only because it signifies and embraces better the activities and purposes of the profession, but also, as President Alford said at the first International conference on sanitary engineer held in London in 1924, (2) "to avoid the mingling of the subjective and the objective in the common term sanitary engineering."

Be it named as it has been or otherwise, Sanitary Engineering comprehends a very large field, which extends from the relatively unimportant handicraft or plumbing as practiced in our country to the designing and the construction of works of the importance of the Panama Canal drainage system or the water supply projects of the large cities of the world. It is essentially a branch of engineering developed along matters of Public Health. As a particular class of profession it can be compared with that of Preventive Medicine followed by our local medical health officers, which as you well know, is a branch of general medicine devoted chiefly to the protection of the health of the community. In this connection, I should like to call your attention to the accurate remarks made by Mr. H. P. Eddy (3) regarding the magnificent link which exists in both professions. They go along side by side:

The Physician and the Engineer have common objectives—the prevention of disease and the prolongation of life—the elimination of discomfort

---

<sup>1</sup> Read in the Tenth District Engineer's Conference held in the city, in December, 1926.

and suffering and the promotion of comfort and happiness. The Physician deals largely with individuals. The Engineer deals with the individuals in group. The physician's function applies himself to the correction of man's internal arrangements and the cure of his internal disarrangements, while the Engineer applies himself to the control and improvement of man's environment. Each profession supplements the other.

And that is the way we come to these particular classes of professionals, the health officers and the sanitary engineers, who must have knowledge of fundamental principles of both engineering and medicine.

If I am allowed to picture the field of both professions I would represent them as the area shaded by two huge trees—one called Engineering and the other, medicine—rooted on a ground with a compensation of mixed fundamentals of both careers.

Yet, the activities just stated, pertaining to the subject matter under our consideration, "sanitary engineering in small Towns in the Provinces," are undertaken separately by two different Bureaus of our Insular Government—yours, the Bureau of Public Works carrying the Engineering part and our health service, the medical side. Despite this handicap, I personally believe that we have all the needed elements of the Islands to undertake sanitary engineering in any town although it will be essential and we will be required to put to work both organizations and the personal interest of everyone into a common effort.

Before going any further, let me give you an idea of the provincial force and organization of our Philippine Health Service. Figure 1 embodies in a diagrammatic way the distribution of our provincial personnel.

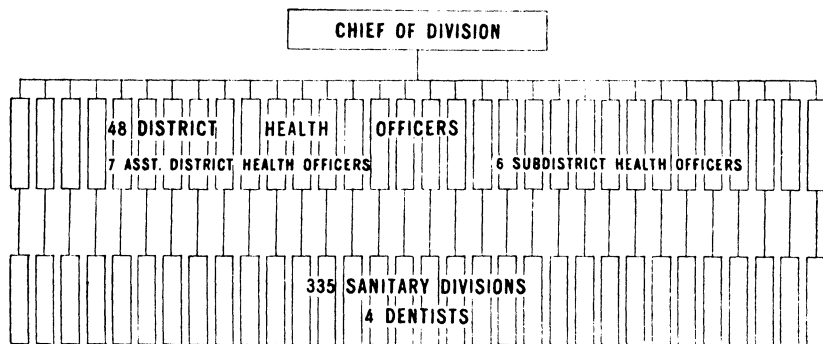


FIG. 1

Without fear of being successfully contradicted, we can assure that there are more medical officers than there are engineers, the former are better distributed than the latter in the prov-

inces. In other words, with the existing organizations in the two Bureaus, our small towns are supervised more by health officers than by engineers. This fact is, however, immaterial and should not worry us a bit. More or less same distribution is found everywhere. As already stated in the foregoing remarks, the doctors have to deal with the individuals of the whole town, while we—the engineers,—try to deal with all the individuals as a unit, a fact that decreases automatically in number our task, and consequently, we need not be so numerous as the health officers are. With your present organization, I think you can cope well with all the Public Health Engineering projects which may reasonably be expected of you to attend in your respective district.

Now, gentlemen, we have come to that classical road crossing where several other roads depart from the very spot we have reached. The subject matter of this paper, "Sanitary Engineering in Small Towns," is so broad that it may easily cause one to lose his bearing, but if it is well developed it would take a good part of one's time. I shall only limit my work to the practice which may be generally established for the average condition, and shall leave the fundamental principles for some other occasions.

What sanitary engineering works are needed in our small towns? What projects of the same nature are expected by the Health Authorities? From what sources shall we obtain the funds for the improvements we may plan? Is the education of the people in matters of sanitation sufficient enough to make our sanitary engineering projects produce the maximum benefit and usefulness? These are some of the few questions that come to the mind of the engineer at the moment he decides to devote his time in planning public health engineering projects for a small town.

Disregarding all local factors, such as the location of the towns, their extension, geology, topography, population, the idiosyncrasies of the inhabitants, wealth, commerce, industries, revenue etc., we shall try to find out in the first place the proper sanitary engineering activities that are needed and that may possibly be undertaken in our small towns.

These can be grouped under the following topics:

- (a) Water supply,
- (b) Sewerage,
- (c) Collection and disposal of refuse,
- (d) Mosquito Control, and
- (e) Housing and town planning.

But, are all these works necessary in our poverty stricken small towns? I will answer, "Yes," simply because we must be keeping up with the spirit of the time, and in order to acquire that famous trade brand of all civilizations "A Modern Small Town." But, is it possible to undertake all these works in our small towns? I should say, "No," because our small towns do not have adequate, sufficient, and necessary incomes, and the people are not yet, as a rule, in a condition to get the maximum benefit that can be derived from the above improvements. In view of this, what work should we start?

Undoubtedly we must begin with the public water supply. The acquisition, distribution and maintenance of a safe and wholesome water supply is the most delicate and important work assigned to the sanitary engineers, as it affects vitally the public health of the community. You are familiar with the saying that "impure water has taken a larger toll of life than all the wars the world has ever known." And if we stop to think that a considerable portion of our population resides in the small, but numerous towns, then we will realize that the provision of a safe water supply lines up with our great and most urgent needs and may do much for the general advancement of the country.

Disregarding the engineering and economical features of the establishment of a water supply system, I shall confine my task to the sanitary requirements of a public water supply.

The present status of the art of supplying a good and safe water to communities is so well developed that it could be said that the sanitary control of water supplies is approaching a mathematical exactness. And this is especially true in well cared and supervised systems, such as those of some large cities. I say approaching, because in passing upon the sanitary properties of waters, specific laboratory analyses are necessary, and every one of you knows the immeasurable weight of the "personal factor" in this particular kind of work. But investigations and researches are continuously going on and the time is not far when the processes will be so reduced as to make the period of examination shorter, the standard of requirements simpler, and the interpretation of the results of analyses less uncertain and cumbersome.

Laboratory work is necessary to determine the particular qualities of the waters considered for the project, not only before development as you are doing now, but also periodically after installation of the system so as to ascertain that the original

quality is not changed and to insure the safe operation of the adopted system.

In all important plants, daily tests are made for turbidity, alkalinity, color, hardness, bacteria, and residual chlorine.

For the small towns, this will be an inconceivable luxury and it is completely inadvisable even to attempt it. How then shall we proceed to obtain and maintain a safe water supply for our small towns?

We should keep in mind three (3) "*proper*": first, proper selection of source of supply; second, proper design and construction; and third proper barriers against possible causes of contamination.

I must abstain myself from touching the first two points: those that pertain to the selection of source and to the construction part of the projects.

To establish measures or implant barriers against possible ways of contamination of small water supply systems is not an easy job. What in general terms can be said on the matter is sometimes mere theories, and, consequently, it may be impracticable to institute them at all in some places. Essentially, they should include all the ordinary sanitary defects of already known systems, or those reported on similar systems. They depend mainly on the conditions of the particular locality where the project has been or is being developed.

Therefore, the first step that should be taken is to make a thorough field investigation of the system in order to search and verify personally all possible routes or ways in which human wastes may get access to our water system.

Having in mind the average condition of our small towns, let me point out some few facts which have been considered as common means of communication for pollution, that is, where the origin of contamination has been traced several times in some systems; and also, the possible effects in case by chance the supply becomes infected.

#### UNDERGROUND SUPPLIES. DEEPWELLS—DEPRESSION OF SURROUNDINGS

If for one reason or another, the location of the well at the time of inspection can not be considered as appropriate because it has been bored in a depressed or low ground subject to overflow, or is located in the path of surface drainage, it is preferable to condemn it and plug it up.

If it is located near a cesspool, pit privies or Antipolo holes, or dug very near a river, avoid the following points:

(a) Leakage in the upper part of casing. In ordinary soil the first ten (10) meters may be more than sufficient.

(b) Lack of tight connection between well casing and pump. The pump head should be installed on a concrete base. Your present standard provides this and, in my opinion, is an excellent one.

(c) Pump of poor or low standard, the priming of which becomes necessary or which does not prevent the return of the pump drippage or oil to the supply.

(d) Careless installation of pumping equipment which may result in its loosening thereby inducing seepage into the well, and

(e) Inadequate facilities for removing waste water.

If the well has been bored on a limestone region because it is the only alternative, and evidence is had that it collects the water within this formation, this well should be under our constant watch, or its water considered as a suspicious supply. The local incidence of intestinal disease of the consumers should be closely observed.

In all cases, adequate facilities for removing waste water should be provided, and some sort of regulation should be enforced to avoid the washing and bathing in or near the neighborhood of the wells.

#### SURFACE DUG WELLS

Safety is at most very doubtful in this method of supply. I wish to invite your attention, however, to a standard drawing of the Philippine Health Service. (Fig. No. 2.)

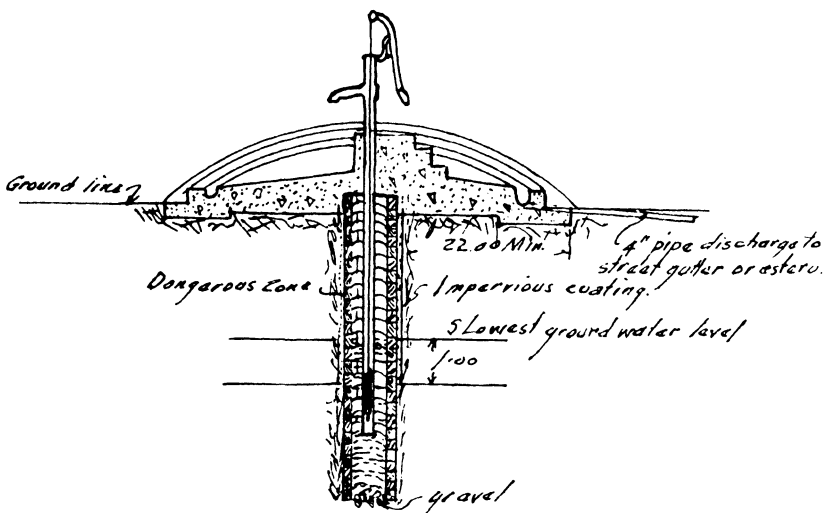


FIG. 2



This requires that surface wells should be provided with a water-tight wall extending above the ground and down a minimum of one (1) meter to the lowest ground water level. The top of the well should be covered with concrete slab or other equally water-tight material which should slope outside. A standard type of pump officially approved is also required.

The Director of Health has imposed the duty of supervising these wells upon the local medical officer.

Because of the reduced number of the Government engineers stationed in the provinces, it is materially impossible to expect of them the supervision of this type of wells, which, unfortunately, is the most common individual or communal method of supply in the small towns.

### SPRINGS

Spring water is another ordinary source of water in small towns; and as a rule, among the provincial people, it is perhaps the most popular source of water supply. It should be remembered, however, that spring water is just rain water more or less filtered thru earth until it outcrops. There are some famous, good, and wholesome springs. This does not mean that all of them are safe or always safe for human consumption. Polluting substances are well scattered on the surface of the ground and the existence of fissures may facilitate their transportation to the spring outlet.

Springs are improved with impervious collecting tank thru the tamping of the spring flow. This should be covered and fenced around against stock contamination. Surplus water as well as storm water should be drained away.

### SURFACE WATERS—IN GRAVITY SUPPLIES

These waters are not safe unless the watershed is uninhabited and free from contaminating agencies. It is also admitted that surface waters are not safe without purification. It is fortuitous, therefore, to talk or theorize on the permanent safety of surface waters without mentioning methods of purifications—and this is inadvisable and impracticable for small communities. Such a fact, notwithstanding a constant vigilance of the system by the officials concerned and a whole-hearted coöperation on the part of the public, may favorably be interchanged with, or substituted for, any purification process that may be recommended as necessary to insure the constant safety of the surface waters in gravity supplies.

## RAIN WATER

If adopted, necessarily it is to be for individual supply and no attempt will be made to discuss its sanitary qualities.

Elsewhere mention was made that in order to judge upon the qualities of waters, certain analyses performed either in the field or in the laboratories were absolutely necessary, and this is true in spite of all precautions that we could humanly take in the selection of source, in the design and in the construction, and in spite of whatever sanitary measures we may deem proper to adopt to safeguard the system. We need also some sort of gauge or index whereby to get information of the efficiency of the system we have. That is, if perchance the system is good or if it turns out to be better when it is being used, no harms is done, but if the contrary happens, how shall we know it without laboratory work?

The local doctors or health officers keep in their office a sort of a balance book, ordinarily known as vital statistics, which in certain way gauges the quality and efficiency of your water supplies. Caution must be taken however, in its interpretation, as hasty judgments easily lead to completely wrong ends. You have heard no doubt of the recognized water borne diseases, such as typhoid fever, dysentery, certain forms of diarrhea and cholera. Their incidence in water supplied areas gives a clue, if not the evidence, of the poor or unsatisfactory quality of the water used for domestic consumption. Unfortunately, these diseases are also transmitted by other means, for example, by contact, thru food or by means of infected flies, and in determining the medium or exact route of communication of the infection lies the controversy. It must be kept in mind, however, that their occurrence or prevalence in a certain place should at least render the water supply system subject to suspicion as to safety, which may mean either an urgent warning for a complete and thorough field investigation or the necessity for an immediate request for a biological examination; and this is true in spite of the fact that a prominent characteristic of an infected water supply is that in case of an outbreak of any of the above mentioned intestinal diseases, the outbreak usually happens in an explosive and widespread manner; but, at any rate, it is admitted to be a good policy to include your water supply as among the possible sources of infection.

Colleagues: so far we have dealt with just one-fifth ( $\frac{1}{5}$ ) of the scope of the subject matter given to me, but because you have a relatively small force in your respective districts; because of

the more important and heavy responsibilities which are imposed upon your Bureau; and because of the immense area you will have to cover in case you decide to tackle the other activities of public health engineering in small towns, as have been indicated in the previous paragraphs, I shall make just a superficial review of each one of the remaining activities, and shall point out part of their sanitary importance and also give you an idea of what the Philippine Health Service is doing at the present time along these lines.

#### SEWERAGE—SEWAGE DISPOSAL

From the health standpoint, the collection and disposal of sewage is next in importance to water supply. It is directly related with the sanitary handling and production of food, with the pollution of the ground and of the streams and also in some way with the breeding of flies. The aim of the biological test of waters performed thru laboratory work, as mentioned before, is chiefly to detect presence of organism suggestive of sewage.

The efficiency of sewage treatment has reached such a perfection that it could be stated that sewage could be purified to any degree desired. The purification could be carried to such a condition that the purified sewage can be safely used again for any purpose. The trouble of sewage treatment is that it requires the expenditure of big amounts of money, both in initial cost and in maintenance, besides the need of skilled personnel for the supervision. These objections or difficulties should eliminate automatically this particular activity in the consideration of this paper.

As appropriate to the conditions of our small towns, the Philippine Health Service recommends the following systems for individual use, the selection depending, of course, upon the availability or not of a pressure supply of water, and also upon the particular location and condition of the proposed sites:

When water supply is available by gravity, any of the following methods could be used:

1. The septic tank with disposal of effluent by dilution;
2. The septic tank with disposal of effluent by subsurface irrigation or absorbing beds;
3. The raw disposal by dilution;
4. The leaching cesspool;
5. The tight cesspool; and finally
6. Other elaborate systems, such as where sewage is treated in small plant.

When running water is not available, the following methods are recommended :

1. The pail system;
2. The liquefying tank;
3. The privy vault or "Pozo Negros";
4. The dry earth privy or "Antipolo System"; and
5. The chemical closet.

Before concluding this part, I wish to invite your attention to the already established public closets and the poor result they have given and are giving still in many places. Ordinarily, this is due, in my opinion, to lack of proper care and sanitary maintenance. I have tried my best to discourage my coworkers from making a blind campaign for the installation of public closets, because I earnestly believe that the question involves not only a problem of sanitary constructions, but also a problem of sanitary maintenance, which small installations, as a rule, cannot afford to give. Naturally, there must be a few exceptions to this statement; I think that nobody is in a better position than you to pass on the possibility or not of some of these projects in your respective provinces.

Another phase of the problem of sewerage is that part that pertains to the necessity of surface drainage in towns with a water supply system. This is becoming of more urgent need on account of the rapidity of the development of public water supplies systems in the provinces. If this is not provided, its absence may aggravate seriously the problem of ground pollution and also that mosquito menace in these particular localities.

#### COLLECTION AND DISPOSAL OF REFUSE

In the small towns, there is no such problem. Usually the individuals themselves take care of the refuse produced in their own premises. The rubbish and all combustible materials are burned and the garbage and all organic residue is either fed to animals or buried. The manure is used as fertilizers for gardening purposes. Attention should be paid to the presence of flies in any place, as flies are closely associated with improper disposal of refuse materials. They may serve as another index to measure the efficiency of the waste disposal of the locality. It is well known to everybody that flies are one of the best vectors of diseases. In my personal opinion, what should be done in this connection in the small towns, is to enact an ordinance to require the owners of the premises to dispose properly and regularly of their refuse, and in case of non-compliance, to render them liable to prosecution in the courts.

### MOSQUITO CONTROL

You know that one of our most common diseases which claims more deaths than any other prevailing disease in our small towns, is "malaria." I am glad to inform you that this year the Philippine Health Service has succeeded in having a law passed, appropriating a sum of ₱100,000 for the purpose of starting a widespread campaign toward its eradication. To accomplish this end, a "malaria section" has been created under the supervision of one of the most efficient and capable doctors of the Health Service, Doctor Manalang. At present, we have three (3) working units, with a physician and a sanitary engineer in each one; the physician to take care of those affected with malaria, or the human side, and the sanitary engineer to look after the mosquito control work. We expect next year to increase the number of units to ten (10), and it is believed that with this number, we shall be able to start the work in a wholesale manner in all heavily infected towns. So in case you have something along this line or have a problem similar to the one experienced at the Novaliches Water Works, do not hesitate to inform us for we may be able to give you some help.

### HOUSING AND TOWN PLANNING

I do not believe I can tell you anything of interest in this particular line of activity. I should like, however, to stress the fact that the sanitary aspect of housing should go hand in hand with the architectural and engineering sides of the problem. According to statistics, we know that an improvement in housing conditions is accompanied by a diminution of the general mortality.

The housing problem in public health engineering is important, as there are concentrated on it all the other previously enumerated activities. That is, you cannot consider a house sanitary, unless it be provided with adequate drainage, sewerage, water supply, with transit facilities, lighting, playgrounds, etc.

Housing, therefore, cannot very well be separated from town or city planning. In other words, health is linked with housing, and this with town planning.

The work that has to be done along these lines in our small towns should be either to bring up the backward district to a predetermined standard, or to adopt a completely new scheme and to develop it gradually to meet the standard requirements of modern living.

In my personal opinion, the above undertakings could be carried out slowly in our small towns thru the enactment of laws

and the passing of local ordinances to regulate the construction of houses. These should be done first before starting a general movement along this line.

Finally, let me inform you of an appeal that had been made to all the doctors of the Philippine Health Service that attended the Second General Conference of Health Officers held in the beginning of this year in Baguio, as follows:

And this is another purpose of my appearing before you today, that is, not only "to seek your disinterested and sincere collective and individual coöperation," in the advancement of the standard of life of our people which will benefit us all and simplify our common problems, but also to ask you to be less severe in your appreciation and judgments of existing improvements engineering in character. We earnestly believe that we have a right to ask you this as coworkers, and also because of the nature of your training.

A close analysis of the table (one enumerating the nature and kind of Engineers' helps), will tell you immediately that no matter what kind of work or improvement is selected or needed by you, it means the investment, and a good one too in the majority of cases, of the money of Juan de la Cruz. And there is nothing more demoralizing to well abiding citizens, than to tell them that the cause of this or that sickness or epidemic is the pollution of this or that, ordinarily, engineering work.

Doctors, I beseech you not to do it so blindly unless you are well documented with laboratory analyses. It will reflect sooner or later also on you and in the work of your coworkers. In formulating your conclusions in any case of this sort, it would be better for every one of you to send the matter to your Division of Sanitary Engineering, not for revision, but only for a guaranteed courteous comment. We are human beings and every one of us more or less entertains some elaborate theoretical opinions. Before giving them, however, to the public, let us get together or communicate to each other, and discuss the merits or demerits of our own principles.

Now, allow me to ask you on this occasion, in my own name and in the name of the health officers, your sincere and honest coöperation in the common undertakings in which you are both bound together to work for the advancement and welfare of your respective districts.

I honestly believe that the success of the district health officers depends a great deal on the extent of coöperation you may give them. Sanitary work rests in sound and in body on team work. Therefore, the success of one man in any such work must also have to be credited to all of his coworkers.

I thank you.

#### REFERENCES

- "Applied Municipal Sanitation," by V. M. EHLERS AND OTHERS.  
 "What the Health Officer Can Learn From the Sanitary Engineers," by EDDY. Engineer News and Record, November 19, 1925.

## RESOLUTION OF THE COMMITTEE ON CANCER OF THE P. I. MEDICAL ASSOCIATION

The Committee on Cancer of the Philippine Islands Medical Association composing of Dr. Liborio Gomez, Chairman, Drs. Fernando Calderon, Jacobo Fajardo, Otto Schobl, Aristeo Ubaldo, Ricardo Fernandez, Jose Guidote, Wm. H. Brown, Ariston Bautista, and Jose Eduque, members, in its meeting of January 27, 1927, approved the following resolution:

WHEREAS cancer is a dreadful and fatal disease,

WHEREAS the greatest majority of cancer cases die without expert medical treatment,

WHEREAS cancer in the majority of cases is curable in the early stage, and

WHEREAS the early diagnosis of cancer is recognized to be the one factor of the greatest importance in the successful control of the disease,

*Be it therefore resolved*, That a copy of this resolution be sent to the Insular Auditor and a copy to the Director of the Philippine General Hospital and the Dean of the College of Medicine.

The sphere of activity of the Cancer Committee are confined under the following duties:

1. Education of the public to recognize signs suspicious of early cancer and to seek treatment promptly.

2. Arousing physicians and nurses to special activity in the matter of detecting early cases and in giving proper advice as to treatment.

3. Treating or help to cause treatment of cases of cancer.

4. Making pathological examinations and to collect statistics and other data with regard to cancer in the Philippines that may aid in the prevention, recognition and treatment of the disease.

Adopted January 27, 1927.

## MISCELLANEOUS

---

### ALBAY

A total of 1,170 yaw patients were given new-salvarsan injections in the province, 585 of whom were from Catanduanes, 447 from Baras, 138 from Virac.

The provincial vaccinating party vaccinated 2,923 persons in the town of Tabaco, but were not able to get thru with the work. Seventy-seven per cent (77%) of those inspected were positive.

### ANTIQUE

On January 12, 1927, the district health officer gave a lecture before the General Assembly of Municipal Presidents, held in the capital. The subject, entitled "General Sanitation of Municipalities," was discussed.

### BATAAN

This office with the assistance of the president, Second Sanitary Division, took part in the Provincial Exposition and Garden Day celebrated at Langa on the 29th and 30th of January. A booth with health exhibits, were displayed to the public. Lectures and demonstration were also given therein.

### BATANGAS

The most important works accomplished were: Seventy-six Antipolo closets were being constructed in 16 municipalities; 9 schools and 838 school children were inspected and physically examined; 2,716 persons were injected with pure cholera, 573 persons with pure typhoid and 127 persons with mixed vaccine and 31 conferences were given by presidents of sanitary divisions.

### BULACAN

The province held its provincial fair, having opened its gates on January 20, 1927. The participation of the Philippine Health Service in this fair consisted in the Presentation of a booth therein.

*Miscellaneous.*—The participation of the Philippine Health Service at the Bulacan Fair was a success. A lecture on tuberculosis was given by district health officer with lantern slides from the Philippine Islands Anti-tuberculosis Society during the Annual Convention of Municipal Presidents and Treasurers.

### CAGAYAN

Extreme efforts had been exerted by the District Health Officer to check dysentery epidemic in Altavas which has gone beyond that municipality and invaded the neighboring barrios of Sapián.



## CAMARINES NORTE

Compulsory reconstruction of old Antipolo system of closets, by sanitary personnel, thru their respective president of sanitary divisions, was emphasized the vaccination with anti-smallpox of children under one year never vaccinated and previously negative results.

## COTABATO

Dysentery broke out many settlements of the province, making the pollution of water supply easy. It is of amoebic type. The mortality is very low, the most heavily infected places, being Dulawan, Maganao, Bulauan, and Lebak. Routine measures were taken as well as lecture for educational purposes showing the great advantage of using water protected from pollution for culinary purposes.

Measles appeared with epidemic tendency in several places of the province, not affected with the disease last year. The disease was common among children of school age as well as the younger ones. The mortality was low, the few deaths registered being mainly due to pulmonary complications. Necessary measures had been taken. The infected places were Buluan and Upi-Burunġutan.

Malaria was prevalent. During the early part of the year Mr. M. Maliari, field assistant director, malaria unit No. 3, a survey of the condition of the most important places in the province was begun, and several types of malarial mosquitoes had been found, samples of which were sent to the Central Office. Toward the end of the month the survey was directed to the southern coast where the used to be and still is a scourge.

The preventive campaign is one of the enterprises mostly attended to at present. Several calls had been made to the office of the provincial governor leading to pushing forward of this undertaking. The anti-variolic vaccination had been the main subject in several instructions given to the field personnel and it is proposed that two of the field personnel who are well acquainted with the conditions in the province will be assigned as especial supervisors for this work. This is necessary so as to smooth and settle as much as possible any misunderstanding that might arise in this campaign on account of the indifference and reluctance of the non-Christians toward this activity of the Service. It is expected, however, that little can be accomplished provided that the full hearted support should be given by the local authorities in every settlement. During the month of January, the number of vaccinations performed is almost the same as in previous days, but the present month, some increase could be noted, on account of the intensive instruction given to the field personnel to accomplish this work. Detailed remarks will be given in the next Narrative Report.

## DAVAO

In Daliao, Talome, Mintal, and Inawayan the survey of mosquito larvæ showed that minimus and barbesstris genus are prevalent. Arrangement has been made with the plantation owners to have them defray the expenses for wages of laborers that may be engaged in this malaria control

work. In the municipal district of Guianga some cases of varicella were recorded. All cases were quarantined and the contracts were given anti-smallpox vaccination. Disinfection of the houses was also performed.

### ILOCOS NORTE

On January 1, 1927, a meeting of all presidents of sanitary divisions of the province was called by the district health officer, the purpose of which is to effect a change relative to the observation of sanitary condition of the province.

### LA UNION

In order to secure a coördinate work and to discuss matter for the good of the health service in the province, a convention of presidents of sanitary divisions and district nurses was held from February 20 to 23, 1927. Those present in the convention were requested to visit the booth that the Philippine Health Service will place in the La Union Fair and Exposition.

### MASBATE

A campaign against yaw was conducted by the district health officer in the different barrios of Cataingan, Masbate, and 34 patients were treated. This being the first yaws campaign made in those places, many yaws patients are still afraid to submit themselves to the neosalvarsan treatment.

### MINDORO

In accordance with the instruction of the Central Office, the health personnel of the district were ordered to make extensive smallpox vaccination campaigns in their respective municipalities.

### MISAMIS

About 10,000 tablets of quinine were distributed during this month in the most infected municipalities. It must be understood that this drug was purchased with the money from the general fund of this province. During this month the mixed vaccine received was used especially among the sellers in the markets.

### NUEVA ECIJA

*Important work or undertaking accomplished.*—The District Health Officer had a conference with the municipal council of Cabanatuan made an appropriation of ₱57,000 for the construction of Sewage System and for the acquisition of an incinerator. It was explained to the said council about the vital importance of acquiring such System in view of the gradually increasing number of inhabitants living therein, the municipality of Cabanatuan being a commercial center.

### NUEVA VIZCAYA

The chief division of provincial sanitation and the medical officer in charge of systematic vaccination visited this province in an inspection trip.

### OCCIDENTAL NEGROS

An appropriation of ₱2,000 recommended by this office for the construction of two isolation houses for lepers of this province has been approved by the Provincial Board and included in the provincial budget for 1927.

## PANGASINAN

*Important works accomplished.*—Investigation as to the cause of the prevalence of malaria and influenza in the province.

## ROMBLON

Investigation in Despujol showed that only 4 cases of malaria were found, one of whom was brought to Manila.

## SULU

Extensive campaign for the location of breeding places of anopheles mosquitoes as being undertaken in this province. All available sanitary inspectors were trained for this purpose.

## SURIGAO

The district health officer has extended aid to the president of the First Sanitary Division in the supervision of draining the town, one-fourth of which was almost under water for nearly six days, due to heavy rainfall.

## TARLAC

The First Annual Tarlac Fair and Provincial Garden Day was held from January 15 to 23, 1927, inclusive. The Philippine Health Service of this province participated by presenting a booth for emergency purposes. During the fair hotels, restaurants, carenderias, and foodstuffs were under the strict vigilance of the sanitary personnel.

## TAYABAS

On January 25, 1927, one thousand mimeograph copies of instructions in Tagalog, prepared by the district health officer of the province, entitled "How to Prevent Influenza," were distributed thru the municipal presidents and presidents of sanitary divisions.

## ZAMBOANGA

*Malaria control work.*—This work is entrusted to a member of the malaria control unit No. 3, who has been assigned in this district. During the month efforts were directed to locating all breeding places of anopheles in the City of Zamboanga, including its nearby barrios and in the municipal district of Margosatubig. The sanitary inspectors detailed to this work are well instructed regarding the use of Paris green and the treatment of the control area are attended by them as an activity of his district.

*Anti-variolic vaccination.*—A total of 1,261 vaccinations was reported to have been performed during the month of December, 1926, out of which 717 were inspected with 244 positives. It is stated that up to the present time not a single report of this activity for the month of January has been received in this office.

*Anti-cholera and anti-typhoid vaccination.*—This activity has been continued during the month but so far no report has as yet been received. According to the various reports that have been received, 3,102 inoculations of this kind were performed during the month of December, 1926.

**ABRA**

A campaign against an epidemic of measles in Bolineg was undertaken. Patients were visited and treated every day with concurrent disinfection. Constabulary soldiers and students from the high school were given Anti-typhoid vaccination.

**BOHOL**

Lepers from Balilijan 1, Loon 1, Inabanga 2, Clarin 1, Jagna 1, and Duero 1, were transferred to Cebu.

**ILOCOS SUR**

*Undertaking accomplished.*—A convention of sanitary inspectors was held in Ligan, lasting three days, with an attendance of 25 inspectors. The topics discussed were diagnosis and management of communicable diseases, first aid treatments of wounds, construction of sanitary closets (Antipolo system), disposal of garbages, etc. The district health officer presided the convention and gave a lecture on the preparation and submission of monthly reports on provincial form No. 70 and vital statistics, uniform and discipline, etc. Other instructive were death upon by other officers.

The district health officer delivered a conference before the Assembly of municipal presidents, to the necessity of increasing the per centum of several municipalities for the health fund and other subjects.

Sanitary conferences were given during the month by the medical officer of the district.

**LAGUNA**

As the result of the campaign carried out in Santa Cruz, Pagsanjan, Magdalena, Lunbaw. Tiendas are now inspected before being opened and medical certifications required for all venders and persons connected with the production of food and drinks, all bakeries are protected against flies thru use of wire screen, and soda water factories are made to comply with the provisions of existing ordinance.

**LANAO**

An emergency hospital at Iligan will soon be built with municipal funds and partly from voluntary contributions.

During January malaria epidemic was at Binuni and Leangan in Kolambugan District. Malaria appears once or twice a year in epidemic form in places occupied by homeseekers. These are agricultural regions which are still covered with a dense forest. A squad of sanitary inspectors, with the acting president of sanitary division of Iligan, were sent to the place for the proper control of the disease.

An investigation of the existence of lepers at Tamparan was conducted outlaws and these lepers find protection from them.

# GENERAL STATISTICS

(Unless otherwise stated, these statistics are for the month of January, 1927)

## ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1927<sup>1</sup>

### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	294,137
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

Districts	Population
<b>No. I. MEISIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,538</b>
<b>No. II. SAMPALOC:</b>	
4. Santa Cruz.....	52,238
5. Quiapo.....	15,862
6. San Miguel.....	4,434
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,232</b>
<b>No. III. PACO:</b>	
8. Port Area.....	4,816
9. Intramuros.....	14,625
10. Ermita.....	16,139
11. Malate.....	16,471
12. Paco.....	16,037
13. Pandacan.....	5,861
14. Santa Ana.....	6,675
<b>Total.....</b>	<b>80,624</b>
<b>Grand total.....</b>	<b>320,394</b>

## METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED FROM HOURLY OBSERVATION, JANUARY, 1927

Date	Pressure mean <sup>1</sup>	Temperature						
		In shade <sup>1</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	760.52	25.0	33.0	7	18.5	10	27.3	27.7
11-20.....	59.74	24.3	31.4	20	18.0	15	27.2	27.5
21-31.....	61.63	23.8	31.8	22	17.4	28	26.9	27.3

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

## METEOROLOGICAL REPORT FOR MANILA CENTRAL, ETC.—Continued.

Date	Relative humidity				
	Mean	Daily mean maximum	Day	Daily mean minimum	Day
	Per cent	Per cent		Per cent	
1-10.....	78.4	84.3	4	72.7	7
11-20.....	78.5	86.7	19	74.1	17
21-31.....	75.0	82.7	21	69.7	31

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (open air)		
		Velocity			Total	Daily maximum	Day
		Total	Daily total maximum	Day			
1-10.....	E	Kms. 1,237.5	Kms. 194.0	7	mm. 33.7	mm. 4.6	7
11-20.....	E quad.	1,271.5	173.5	14	31.6	5.1	10
21-31.....	NE	1,636.5	165.5	25 31	41.2	4.8	17 26 31

Date	Sunshine			Rainfall	
	Total	Daily maximum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	52 50	8 05	9	5.9	3
11-20.....	23 55	8 20	17	2.1	2
21-31.....	36 35	5 35	23	0.1	1

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

## NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	9	7	16	60.15
Filipinos.....	714	612	1,326	53.11
Spaniards.....	2	2	4	24.11
Other Europeans.....	5	3	8	83.71
Chinese.....	21	23	44	29.03
All others.....	7	7	14	75.46
Total and average.....	758	654	1,412	51.92

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MBISIC:</b>							
1. Tondo.....	226	187	413	12	10	22	435
2. San Nicolas.....	43	35	78	1	2	3	81
3. Binondo.....	23	29	52	1	3	4	56
Total.....	292	251	543	14	15	29	572
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	97	79	176	4	6	10	186
5. Quisapo.....	21	11	32	1	2	3	35
6. San Miguel.....	11	10	21				21
7. Sampaloc.....	105	90	195	9	9	18	213
Total.....	234	190	424	14	17	31	455
<b>No. III, PACO:</b>							
8. Port Area.....		1	1				1
9. Intramuros.....	22	23	45	1	2	3	48
10. Ermita.....	44	33	77		1	1	78
11. Malate.....	71	53	124	4	3	7	131
12. Paco.....	27	28	55	2	1	3	58
13. Pandacan.....	17	19	36	3	3	6	42
14. Santa Ana.....	13	14	27				27
Total.....	194	171	365	10	10	20	385
Grand total.....	720	612	1,332	38	42	80	1,412

Attended by physicians: living, 408; stillbirths, 24.

Attended by midwives: living, 114; stillbirths, 4.

Attended by families: living, 890; stillbirths, 26.

NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS  
IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	3	1	4	15.04
Filipinos.....	329	294	623	24.95
Spaniards.....	1	1	2	12.05
Other Europeans.....				
Chinese.....	20	2	22	14.62
All Others.....	3	3	6	32.34
Total and average.....	356	301	657	24.16

# NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEINIC:</b>			
1. Tondo.....	109	109	212
2. San Nicolas.....	25	18	43
3. Binondo.....	7	5	12
Total.....	141	126	267
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	52	41	98
5. Quiapo.....	14	9	23
6. San Miguel.....	7	5	12
7. Sampaloc.....	60	47	107
Total.....	133	102	235
<b>No. III, PACO:</b>			
8. Port Area.....	1		1
9. Intramuros.....	5	11	16
10. Ermita.....	11	4	15
11. Malate.....	29	30	59
12. Paco.....	25	18	43
13. Pandacan.....	6	6	12
14. Santa Ana.....	5	4	9
Total.....	82	73	155
<b>Grand total.....</b>	<b>356</b>	<b>301</b>	<b>657</b>

## NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	115	89
Divorced.....	1	
Widowed.....	38	71
Single.....	259	179
Conditions not stated.....	2	1
Total.....	415	340
<b>Grand total.....</b>	<b>755</b>	

Stillbirths.....	54
Number of deaths with medical attendance.....	457
Number of deaths without medical attendance.....	298



## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	107	88	9	8	212
1 year plus.....	40	26	1	2	69
2 years plus.....	12	14	.....	.....	26
3 years plus.....	12	9	2	2	25
4 years plus.....	3	.....	1	1	5
5 to 9 years.....	13	8	1	.....	22
10 to 14 years.....	10	3	.....	2	15
15 to 19 years.....	5	10	4	2	21
20 to 24 years.....	17	10	5	2	34
25 to 29 years.....	13	19	4	6	42
30 to 34 years.....	6	10	4	4	24
35 to 39 years.....	10	15	2	4	31
40 to 44 years.....	13	9	1	1	24
45 to 49 years.....	16	11	3	.....	30
50 to 54 years.....	14	8	4	.....	26
55 to 59 years.....	13	10	4	1	28
60 to 64 years.....	12	7	7	1	27
65 to 69 years.....	8	6	1	.....	15
70 to 74 years.....	10	10	3	1	24
75 to 79 years.....	6	2	1	1	10
80 to 84 years.....	8	11	.....	1	20
85 to 89 years.....	3	4	.....	.....	7
90 to 94 years.....	3	4	.....	.....	7
95 to 99 years.....	.....	6	1	.....	7
100 years and over.....	2	1	.....	.....	3
Age not stated.....	.....	.....	.....	.....	.....
Total.....	356	301	58	39	754

NOTE.—One (1) male Filipino, age unknown, permanent residence unknown, not included in the above table.

## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													8
	a. Typhoid fever.....			2	5					1				1
	b. Paratyphoid fever.....			1										
5	Malaria:													6
	a. Malarial fever.....			5						1				3
7	Measles.....			3										1
9	Whooping cough.....													
10	Diphtheria.....			1	1									1
11	Influenza:													1
	a. With pulmonary complications specified.....			1	1									1
	b. Without pulmonary complications specified.....			1	1									1
16	Dysentery:													3
	a. Bacillary.....			3										3
	b. Bacillary.....			5	4									9
	c. Unspecified or due to other causes.....			1										1
21	Erysipelas.....			1										1
24	Meningococcus meningitis.....			1										1
29	Tetanus:													1
	a. Umbilical.....			1										1
	b. Others.....			3										3
31	Tuberculosis of the respiratory system.....			69	67					6		1		143
32	Tuberculosis of the meninges and central nervous system.....			4	2									6
33	Tuberculosis of the intestines and peritoneum.....			1	1									2
36	Tuberculosis of other organs:													
	c. Tuberculosis of the lymphatic system (mesenteric and retroperitoneal glands excepted).....			1										1
37	Disseminated tuberculosis:													1
	a. Chronic or unspecified.....													1
38	Syphilis.....									1				1



# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
97-107	<i>V. Diseases of the respiratory system</i>													
99	Bronchitis:													39
	a. Acute.....			22	17									16
	b. Chronic.....			9	6					1				
100	Broncho pneumonia:													83
	a. Bronchopneumonia.....			47	35					1				5
	b. Capillary bronchitis.....			3	2									
101	Pneumonia:													14
	a. Lobar.....			5	9									1
	b. Unspecified.....													1
102	Pleurisy.....													1
105	Asthma.....													1
107	Other diseases of the respiratory system (tuberculosis excepted). c. Others under this title.....				1									1
108-127	<i>VI. Diseases of the digestive system</i>													
111	Ulcer of the stomach and duodenum:													1
	a. Ulcer of the stomach.....			1	1									1
112	Other diseases of the stomach (cancer excepted).													1
113	Diarrhea and enteritis (under 2 years of age).			13	13									26
114	Diarrhea and enteritis (2 years and over).			2	7									9
116	Diseases due to other intestinal parasites:													3
	c. Nematodes (other than ancylostoma).			3							1			2
117	Appendicitis and typhlitis.....			1										1
122	Cirrhosis of the liver:													2
	b. Not specified as alcoholic.....	1			1									2
124	Other diseases of the liver.....			4	1									5
126	Peritonitis without specified cause.....												1	1

VII. Nonvenereal diseases of the genito-urinary system and annexa

128	Acute nephritis (including unspecified under 10 years of age).....	5	2						7
129	Chronic nephritis (including unspecified 10 years and over).....	10	10						20
131	Other diseases of the kidneys and annexa.....	1							1
132	Diseases of the bladder.....		1						1
133	Diseases of the bladder.....		1						1
137	Cysts and other benign tumors of the ovary.....		1						1
143-150	VIII. The puerperal state								
143	Accidents of pregnancy:								1
144	c. Others under this title.....		1						3
151-154	Puerperal hemorrhage.....		3						
151-154	IX. Diseases of the skin and of the cellular tissue								
151	Gangrene.....							1	1
152	Furuncle.....							1	1
153	Acute abscess.....	1	1						1
159	XI. Malformations								
159	Congenital malformations (stillbirths not included:								1
160-163	c. Others under this title.....	1							
160-163	XII. Early infancy								
160	Congenital debility, icterus, and sclerema.....	24	13						37
161	Premature birth; injury at birth:								
162	a. Premature birth (not stillborn).....	12	10					2	24
164--	Other diseases peculiar to early infancy.....	1							1
164--	XIII. Old age								
164	Senility.....	13	20						33
165-203	XIV. External causes								
165-203	Accidental traumatism by machines.....	1							1
187	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):								
188	a. Railroad accidents.....		1						1
188	g. Landslides, other crushing.....	1						1	1
198	Homicide by cutting or piercing instruments.....								1
	Total.....	3	1	329	294	1	1	2	657
	Grand total.....	4		623		2		6	657

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....			6	1									7
7	a. Malarial fever.....			1	2									3
10	Measles.....			1	1									1
20	Diphtheria.....			1										1
20	Leprosy.....			1										1
27	Anthrax.....			1										1
29	Tetanus:													
	b. Others.....				1									1
30	Myocoses.....					1								1
31	Tuberculosis of the respiratory system.....			10	4					1				15
38	Syphilis.....			2										2
43-49	<i>II. General diseases not included in Class I</i>													
44	Cancer and other malignant tumors of the stomach, liver.....			3										3
49	Cancer and other malignant tumors of other or unspecified organs.....				1									1
55	Beriberi:													
	a. Infants.....				1									1
	b. Adults.....			1	1									2
57	Diabetes mellitus.....			1										1
70-86	<i>III. Diseases of the nervous system and of the organs of special sense</i>													
71	Meningitis:													
	a. Simple meningitis.....				1									1
75	Paralysis without specified cause:													
	a. Hemiplegia.....			1										1
86	Diseases of the ear and of the mastoid process:													
	a. Diseases of the ear.....				1									1

## IV. Diseases of the circulatory system

87-96	Pericarditis.....	1							1
97-107	V. Diseases of the respiratory system								
99	Bronchitis:								
	a. Acute.....	3							4
	b. Chronic.....								1
100	Bronchopneumonia:								
	a. Bronchopneumonia.....	3							3
101	Pneumonia:								
	a. Lobar.....	5							1
	b. Unspecified.....	1							1
102	Pleurisy.....								
104	Gangrene of the lung.....	1							1
106	Pulmonary emphysema.....								1
108-127	VI. Diseases of the digestive system								
111	Ulcer of the stomach and duodenum:								
	a. Ulcer of the stomach.....	1							1
113	Diarrhea and enteritis (under 2 years of age).....	1							
116	Diseases due to other intestinal parasites:								
	a. Trematodes.....								1
117	Appendicitis and typhilitis.....								1
126	Peritonitis without specified cause.....								1
128-142	VII. Nonsensereal diseases of the genito-urinary system and anæza								
128	Acute nephritis (including unspecified under 10 years of age)	2							
129	Chronic nephritis (including unspecified 10 years and over)	1							2
138	Salpingitis and pelvic abscess (female).....								1
139	Benign tumors of the uterus.....								1
143-150	VIII. The puerperal state								
144	Puerperal hemorrhage.....								1
145	Other accidents of labor:								
	c. Others under this title.....								1
146	Puerperal septicæmia.....								3
151-154	IX. Diseases of the skin and of the cellular tissue								
151	Gangrene.....	1							1

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
160-163	<i>XII. Early infancy</i>													
160	Congenital debility, icterus, and sclerema.....			1	1									2
164	<i>XIII. Old age</i>													
164	Senility.....			1										1
165-203	<i>XIV. External causes</i>													
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	c. Automobile accidents.....			1	1									1
198	Homicide by cutting or piercing instruments.....			1										1
	Total.....	2		51	39	2	2			3				97
	Grand total.....	2		90		2	2			3				97



## INFANT MORTALITY

Causes of death	Under 24 hours	24 hours to under 36 hours	36 hours to under 48 hours	48 hours to under 14 days	14 days to under 1 year	Total
5. Malaria:						
a. Malarial fever.....					1	1
9. Whooping cough.....					1	1
10. Diphtheria.....					1	1
16. Dysentery:						
c. Unspecified or due to other causes.....					1	1
21. Erysipelas.....					1	1
29. Tetanus:						
a. Umbilical.....				1		1
31. Tuberculosis of the respiratory system.....					2	2
32. Tuberculosis of the meninges and central nervous system.....					1	1
55. Beriberi.....	1			7	34	42
71. Meningitis:						
a. Simple meningitis.....					3	3
78. Epilepsy.....					1	1
88. Endocarditis and myocarditis (acute).....					1	1
99. Bronchitis:						
a. Acute.....					27	27
b. Chronic.....					6	6
100. Bronchopneumonia:						
a. Bronchopneumonia.....					36	36
b. Capillary bronchitis.....					2	2
102. Pleurisy.....					1	1
113. Diarrhea and enteritis.....					17	17
126. Peritonitis without specified causes.....					1	1
128. Acute nephritis.....					1	1
159. Congenital malformations (stillbirths not included):						
c. Others under this title.....	1					1
160. Congenital debility, icterus and scler- ema.....	14	4		10	11	39
161. Premature birth; injury at birth:						
a. Premature birth (not stillborn).....	16			6	2	24
162. Other diseases peculiar to early infancy.....	1					1
Total.....	33	4		24	151	212

## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set.....	22,134
Number of rats caught by spring traps.....	3,124
Number of cage wire traps set.....	682
Number of rats caught by cage wire traps.....	1
Number and kind of baits (coconuts).....	28,024
Number of poison portions placed.....	13,753
Number of rats found poisoned.....	283
Number of rats killed by clubs and other weapons.....	914
Number of rats found dead from other causes.....	561
Total number of rats otherwise caught, found dead or killed.....	4,883
Total number of rats sent to the laboratory for examination.....	4,883
Total number of rats found positive for plague.....	0

# TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF JANUARY, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.	No. 1.....	3	1	1	1	1	1	1	3	1	2	2	5	3
	{ No. 2.....		1	1							1		1	
	{ No. 3.....													
II.	No. 4.....	3												
	{ No. 5.....	1		4	2				3		4	2	7	2
	{ No. 6.....								1				1	
	{ No. 7.....	3	1	3	1	1	1		4	1	4	1	8	2
III.	No. 8.....													
	{ No. 9.....	4							4				4	
	{ No. 10.....	2		2					2		2		4	
	{ No. 11.....													
	{ No. 12.....	3	2	1					3	2	1		4	2
	{ No. 13.....													
	{ No. 14.....													
	Grand total.....	19	4	12	4	1	2	1	20	4	14	5	34	9

### REMARKS:

Cases confirmed as typhoid fever.....	33
Cases confirmed as paratyphoid fever.....	1
By autopsy.....	0
By blood culture.....	1
By Widal reaction.....	8
By urine examination.....	0
By feces examination.....	0
By clinical symptoms.....	24
Cases reported among nonresident persons not included in the table.....	23
Deaths reported among nonresident persons not included in the table.....	7
Typhoid carrier—None	

CONFIRMED CASES

Health districts	Hospital						Home						Total				Grand total	
	Male			Female			Male			Female			Male		Female		Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths				
I.	No. 1.	3	2	2	1		1	1					4	3	2	1	6	4
	No. 2.						1	1		1	1		1	1	1	1	2	2
	No. 3.									1	1				1	1	1	1
II.	No. 4.			1						1	1				2	1	2	1
	No. 5.																	
	No. 6.	1											1	1			1	
	No. 7.						3	3	1				3	3	1		.4	3
	No. 8.																	
	No. 9.	1											1				1	
III.	No. 10.																	
	No. 11.	1	1										1	1			1	1
	No. 12.																	
	No. 13.																	
	No. 14.																	
Total.		6	3	3	1		5	6	4	3			11	8	7	4	18	12

REMARKS:

Amoebic dysentery ..... 0  
 Bacillary dysentery ..... 8  
 Unspecified ..... 10  
 Cases reported among nonresident persons not included in the table ..... 2  
 Deaths reported among nonresident persons not included in the table ..... 0

Dysentery carrier—None

**CHOLERA REPORTED DURING THE MONTH OF JANUARY, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Grand total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I. {	No. 1													
No. 2														
No. 3														
II. {	No. 4													
No. 5														
No. 6														
No. 7														
III. {	No. 8													
No. 9														
No. 10														
No. 11														
No. 12														
No. 13														
No. 14														
Grand total														

**REMARKS:**

No non resident case was reported during the month.

Cholera carrier—8.

## DIPHTHERIA REPORTED DURING THE MONTH OF JANUARY, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospita!						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female			Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths			
I. { No. 1. No. 2. No. 3.																				
II. { No. 4. No. 5. No. 6. No. 7.	2			2									2			2			4	
III. { No. 8. No. 9. No. 10. No. 11. No. 12. No. 13. No. 14.	2	1		3									2	1		3			5	1
Total.....	4	1		6									4	1		6			10	1

## REMARKS:

Cases reported among nonresident persons not included in the table..... 4

Deaths reported among nonresident persons not included in the table..... 1

Diphtheria carrier—1.

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF JANUARY, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	17	4	6	
Varicella.....	11	7		
Varioloid.....				
Smallpox.....				
Measles.....	15	20	3	
Whooping cough.....		1		1
Influenza.....	22	6	2	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....	1	1	1	
Tuberculosis of respiratory organs.....	184	173	76	67
Tuberculosis of other organs.....	6	4	6	4
Beriberi, infantile.....	17	24	17	24
Beriberi, adult.....	3	4	3	4

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	31	4	1	2
Varicella.....	1	1		
Varioloid.....				
Smallpox.....				
Measles.....	1	1		1
Whooping cough.....				
Influenza.....	3	2		
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of respiratory organs.....	29	16	11	4
Tuberculosis of other organs.....				
Beriberi, infantile.....	1	1		1
Beriberi, adult.....	1	1	1	1

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF JANUARY, 1927**

Sera and vaccines	On hand January 1, 1927	Received during the month	Total to be accounted for	Distrib- uted during the month	Remaining at the end of the month
Anti-diphtheric serum (units).....	370,000	500,000	870,000	230,000	640,000
Anti-dysenteric serum (ampoules).....	203		203	180	23
Anti-tetanic serum (units).....		1,221,000	1,221,000	521,000	700,000
Cholera vaccine (c. c.).....		60,000	60,000	34,000	26,000
Dried vaccine virus (units).....	93,700	100,000	193,700	105,200	88,500
Fresh vaccine virus (units).....	197,100	200,000	397,100	181,300	215,800
Mixed typhoid-cholera vaccine (c. c.).....		120,000	120,000	105,100	14,900
Normal horse serum (ampoules).....		20	20	20	
Typhoid vaccine (c. c.).....	4,740	24,000	28,740	22,800	5,940

# REPORT OF ANTI-SMALLPOX VACCINATION IN THE CITY OF MANILA DURING THE MONTH OF JANUARY, 1927

43

Health districts	Municipal districts	Vaccinations			Inspections of persons vaccinated					
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over	
			Never	Successfully	Unsuccessful	Positive	Negative	Positive	Negative	Total
No. 1.....	Tondo.....	358	287	7	64	358	43	29	1	387
	{ San Nicolas.....	185	150	7	28	91	8	11	1	102
	{ Binondo.....	698	106	578	14	53	7	6		59
	Santa Cruz.....	929	147	727	55	201	18	28	9	339
No. 2.....	Quiapo.....	113	100	2	11	59	9	5		64
	{ San Miguel.....	90	84	1	5	32	8	2		34
	{ Sampaloc.....	236	194	8	34	222	13	15	1	237
	Port Area.....									
No. 3.....	Intramuros.....	46	38	1	7	47	7			47
	{ Ermita.....	107	89	2	16	87	17	1		88
	{ Malate.....	219	111	79	29	119	16	9	1	128
	{ Paco.....	81	69		12	70	12			70
	{ Pandacan.....	34	28		6	34	6			34
	{ Santa Ana.....	29	24		5	26	5			26
Grand total.....		3,125	1,427	1,412	286	1,399	169	106	13	283
										1,615
										465

## VACCINE VIRUS:

Received.....	11,400
Used.....	8,850
Remained.....	2,550

**ANTICHOLERA VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF JANUARY, 1927**

Health districts	Municipal districts	Number of injections made in—								Total number of injections					
		Adults				Children				First		Second			
		First injections		Second injections		First injections		Second injections							
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1.	Tondo.....														
	San Nicolas.....														
	Binondo.....														
No. 2.	Santa Cruz.....														
	Quisno.....														
	San Miguel.....														
	Sampaloc.....														
	Port Area.....														
No. 3.	Intramuros.....														
	Ermita.....														
	Malate.....														
	Paco.....		334											334	
	Pandacan.....														
	Santa Ana.....														
	Total.....		334											334	

NOTE.—V., vaccinations; R., revaccinations.



Health districts	Municipal districts	Number of injections made in—												Total number of injections																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		Adults						Children						Total number of injections																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		First injections			Second injections			Third injections			First injections			Second injections			Third injections			First			Second			Third																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
		V.	R.*		V.	R.		V.	R.		V.	R.		V.	R.		V.	R.		V.	R.		V.	R.		V.	R.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
No. 1.	{Tondo.....	1	1,499																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.  
Typhoid and paratyphoid vaccine used for the third injections.

NOTE.—V., in persons never vaccinated before; R., revaccinations.

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF JANUARY, 1927**

Health districts	Municipal districts	Number of injections made in—						Total number of injections	
		Adults		Children		First	Second	First	Second
		First injections	Second injections	First injections	Second injections				
No. 1.	Tondo.....	17	14	5	2	22	16		
	San Nicolas.....	8	.....	1	.....	9	.....		
	Binondo.....	5	4	4	3	9	7		
	Santa Cruz.....	8	.....	6	.....	14	.....		
No. 2.	Quipo.....	5	.....	.....	.....	5	.....		
	San Miguel.....	8	.....	2	.....	10	.....		
	Sampaloc.....	5	6	2	2	7	8		
	Port Area.....	.....	.....	.....	.....	.....	.....		
No. 3.	Intramuros.....	7	6	1	1	8	7		
	Ermita.....	.....	.....	.....	.....	.....	.....		
	Malate.....	.....	.....	.....	.....	.....	.....		
	Paco.....	6	.....	4	.....	10	.....		
	Pandacan.....	.....	.....	.....	.....	.....	.....		
	Santa Ana.....	.....	.....	.....	.....	.....	.....		
	Total.....	69	30	25	8	94	38		

SMALLPOX VACCINATIONS REPORTED IN THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>

Provinces	Vaccinations			Inspection of persons vaccinated					
	Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over	
		Never	Successfully	Unsuccessfully	Positive	Negative	Positive	Negative	Total
Agusan.....	805	218	417	170	23	24	46	122	191
Albay.....	5,961	1,305	4,023	633	554	280	674	1,360	2,588
Bataan.....	1,239	410	465	364	307	53	336	259	571
Batangas.....	5,405	1,876	2,314	858	746	277	886	619	902
Bohol.....	2,405	794	945	666	264	69	405	560	2,319
Bulacan.....	2,778	958	842	983	721	143	412	216	1,229
Camarines Norte.....	8,529	687	1,161	6,681	69	6	326	1,916	1,642
Cavite.....	2,659	588	1,960	1,111	556	80	437	1,890	2,311
Davao.....	5,020	1,407	1,176	2,437	33	8	189	1,029	1,774
Iloilo.....	15,039	4,048	2,487	8,504	797	152	1,419	2,370	1,551
Isabela.....	9,129	2,464	1,495	5,170	377	169	1,098	2,586	4,472
Laguna.....	3,738	834	1,366	1,538	438	78	503	1,035	2,991
Marikina.....	7,117	1,452	1,083	4,582	106	6	475	1,339	1,364
Marinduque.....	1,328	296	517	515	73	19	92	347	1,091
Mountain Province.....	1,326	203	226	1,497	185	19	814	1,723	2,322
Nueva Ecija.....	3,881	1,466	1,635	581	635	209	384	523	512
Nueva Vizcaya.....	437	158	245	39	74	50	23	82	1,710
Occidental Negros.....	8,556	966	1,860	3,730	600	134	706	568	1,585
Pampanga.....	4,118	967	1,351	1,800	376	88	355	849	2,722
Pangasinan.....	5,645	1,976	3,007	962	924	294	1,225	1,028	1,992
Rizal.....	13,634	1,818	441	11,375	536	114	943	1,719	1,894
Romblon.....	8,272	1,516	1,748	5,008	228	61	982	3,300	3,177
Sulu.....	2,740	477	275	92	42	23	137	291	3,478
Tarlac.....	4,413	673	576	1,431	218	101	413	593	3,610
Zambales.....	969	1,791	1,799	823	649	136	1,084	1,459	1,224
Total.....	126,330	31,750	32,840	61,740	9,757	2,651	14,978	27,298	3,192
									464
									33,374

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by the vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-CHOLERA VACCINE  
RECEIVED FROM THE PROVINCES DURING JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	4,873	886		5,759
Bataan.....	391			391
Batangas.....	2,796			2,796
Bohol.....				
Cagayan.....				
Catanduanes.....				
Laguna.....				
Pampanga.....	13,251	2,316		15,567
Pangasinan.....	274	86		360
Rizal.....	954	64		1,018
Total.....	22,539	3,352		25,891

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-TYPHOID VACCINE  
RECEIVED FROM THE PROVINCES DURING JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	35	26		61
Bataan.....				
Batangas.....	37	34	29	100
Bohol.....				
Cagayan.....				
Catanduanes.....	7	6		13
Laguna.....	43	50	46	139
Pampanga.....	165	126	51	342
Pangasinan.....	308	216	122	646
Rizal.....	85	321		406
Total.....	680	779	248	1,707

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES DURING JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....				
Bataan.....	258	107		365
Batangas.....	587	64		651
Bohol.....	157	39		196
Cagayan.....	120	88		208
Catanduanes.....				
Laguna.....				
Pampanga.....	450	189		639
Pangasinan.....				
Rizal.....	2,983	725		3,708
Total.....	4,555	1,212		5,767

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF JANUARY, 1927**

(No case and no death reported during the month.)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING  
THE MONTH OF JANUARY, 1927**

(No case and no death reported during the month.)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF JANUARY, 1927**

	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, January 1, 1927:</b>				
Minor.....	146	256	74	476
Sewer.....	25	47	1	73
Vacating.....	8	11	.....	19
Filling.....	10	35	19	64
<b>Total.....</b>	<b>189</b>	<b>349</b>	<b>94</b>	<b>632</b>
<b>Orders issued during the month:</b>				
Minor.....	6	4	7	17
Sewer.....	1	1	.....	2
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>7</b>	<b>5</b>	<b>7</b>	<b>19</b>
<b>Orders completed during the month:</b>				
Minor.....	12	42	11	65
Sewer.....	3	.....	.....	3
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>15</b>	<b>42</b>	<b>11</b>	<b>68</b>
<b>Orders cancelled during the month:</b>				
Minor.....	1	1	1	3
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>
<b>Orders pending, January 31, 1927:</b>				
Minor.....	139	217	69	425
Sewer.....	23	48	1	72
Vacating.....	8	11	.....	19
Filling.....	10	35	19	64
<b>Total.....</b>	<b>180</b>	<b>311</b>	<b>89</b>	<b>580</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	27	39	35	101
<b>Permits for minor building constructions:</b>				
Approved.....	149	49	15	213
Disapproved.....	23	2	.....	25
<b>New buildings completed.....</b>	<b>23</b>	<b>21</b>	<b>33</b>	<b>77</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	14	25	8	47
Disapproved.....	4	7	12	23
<b>Prosecutions:</b>				
Convictions.....	.....	.....	1	1
Dismissals.....	1	1	1	3
Amount of Fines.....	.....	.....	P20	P20
<b>Plumbing permits issued.....</b>	<b>36</b>	<b>63</b>	<b>55</b>	<b>154</b>
<b>Plumbing projects completed.....</b>	<b>20</b>	<b>53</b>	<b>46</b>	<b>119</b>
<b>Premises connected to the sanitary sewer to December 31, 1926</b>	<b>2,498</b>	<b>4,268</b>	<b>654</b>	<b>7,420</b>
<b>Connected during the month.....</b>	<b>2</b>	<b>6</b>	<b>10</b>	<b>18</b>
<b>Total.....</b>	<b>2,500</b>	<b>4,274</b>	<b>664</b>	<b>7,438</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

FEBRUARY, 1927

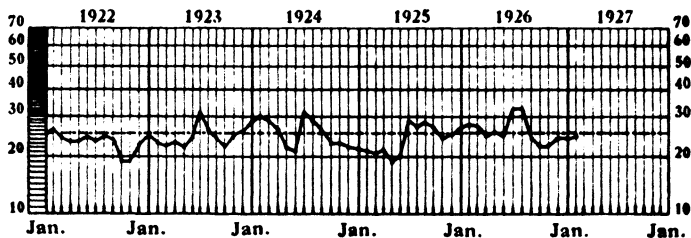
No. 2

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand to mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1927

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Remarks on the Comparison of Leprosy and Tuberculosis, by Dr. H. W. WADE .....	53
Politics and Public Health Officers, by Dr. ANTONIO B. FERNANDEZ.....	57
Trachoma Control among the School Children, by Dr. PEDRO A. RODRIGUEZ .....	60
Miscellaneous .....	68
General Statistics .....	75



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VII**

**FEBRUARY, 1927**

**No. 2**

**REMARKS ON THE COMPARISON OF LEPROSY AND  
TUBERCULOSIS<sup>1</sup>**

By **H. W. WADE, M.D.**

*Chief Pathologist, Culion Leper Colony, Philippine Health Service*

[Abstract]

This paper first deals briefly with the principal similarities, which are usually emphasized in such discussions, and attention is then drawn to points of dissimilarity.

**SIMILARITIES**

*Ignorance*, with its concomitant unhygiene and poverty, are important etiological factors, and anything that will improve this situation for tuberculosis will undoubtedly be beneficial as regards leprosy incidence.

*Other diseases and debilitating conditions* are undoubtedly important in both diseases, both as predisposing causes, which facilitate infection, or precipitating factors which activate latent infections.

*Individual susceptibility* to some extent varies similarly. As regards *age*, congenital infection is rare, but children are especially susceptible to infection, though in disease-frequency there is dissimilarity. In both diseases the incidence is decidedly the higher in the male *sex*, probably because of the greater exposure of men to debilitating conditions.

*Transmission*, in both, is apparently entirely by direct or indirect contact with an infectious person, not by any intermediate carrier. In both, there are dangerous cases, dissemi-

---

<sup>1</sup> Read before the First National Congress on Tuberculosis, Manila, December, 1926.

nating bacilli, and "closed" cases, harmless at least for the time being. The more prolonged and intimate the contact with an infectious case the greater the danger of infection.

The term "*incubation period*" is not correctly used in this connection, for after infection there is not necessarily a continuous progression to disease production. Latency of foci of infection is common, whence the great variability and frequent great length of the period between exposure and appearance of symptoms.

*Immunity*, a complicated question, is probably in part at least responsible for the development of comparative resistance in peoples of recently infected regions. There has been at least one observation indicating an immunity response in persons in contact with lepers. Febrile exacerbations of both diseases are held to manifest a basic immunity phenomenon.

*The bacilli* have similarities of morphology and staining peculiarities that put them together in the genus *Mycobacterium*. Each has sub-species, as those of human, bovine, etc. tuberculosis, and those of human and rat leprosy. Neither is highly infectious, as is the diphtheria bacillus, for example, and neither is a strong toxin-producer. There are, however, important differences. *The lesions* of both are classed among the infectious granulomata, and the same type of cell plays a basic rôle in each. Beyond this there are chiefly dissimilarities.

*Clinically*, both diseases are typically chronic, subject to periods of progression and of inactivity or retrogression. In neither does reinfection from without seem of importance. Late in the disease both show marked changes in the serum proteins.

#### DISSIMILARITIES

As regards *source*, there is only the human leper to be considered, but bovine tuberculosis is important where cow's milk is much used in feeding children.

Dissemination of the tubercle bacillus from human sources is chiefly from the lungs. In leprosy the skin is probably the most important source, on the whole, though the upper air passages are important and bacilli escape in various other ways.

The *infectiousness* of tuberculosis in general populations is greater than that of leprosy, larger proportions suffering from the disease.

The *portal of entry* of tuberculosis is usually the air passages. For leprosy one cannot be so definite, but many believe that the skin is the usual portal. Other ways of entering are, how-

ever, possible; there is perhaps less regularity than in tuberculosis.

The *bacilli* have important differences. In morphology the tubercle bacilli are typically (not constantly) longer, more curved, fewer, more scattered; the lepra bacilli tend to form compact little masses. Chemically they differ somewhat in acid-fastness, but the chief difference is that the waxy element that gives them their staining peculiarity is much the less stable in the leprosy bacillus. As for the complicated question of *toxicity*, there is much the less clinical evidence of it in leprosy. As for tissue-injury that may perhaps be due to toxins, the comparatively few tubercle bacilli in a lesion typically cause necrosis, whereas in leprosy the great numbers present typically do not. A striking difference between the bacilli is the all but obligate parasitism of that of leprosy whereas the tubercle bacillus can be readily cultivated and readily infects lower animals, that of leprosy is cultivated with great difficulty if at all, and has never been made to cause a progressive infection of a lower animal.

In *immunity* the chief difference is the evidently lower degree conferred by the leprosy bacillus. Persons in contact apparently less often receive protective infections as shown by the large percentage of children who develop symptoms. Resistance that develops in the diseased person much less often overcomes leprosy than tuberculosis without special medication; this occurrence is common in the latter disease.

There is not seen the distinction of *type of disease* according to age that is described for tuberculosis.

The *distribution* of leprosy in the body is much greater. For example, a person with visceral tuberculosis seldom has cutaneous tubercles, and vice versa, but leprosy is ordinarily widely disseminated.

The typical *localizations* are interestingly different. Organs and regions most affected by tuberculosis (lung and intestine, kidneys, and the deep lymph node groups) are rarely or but slightly affected in leprosy. The skin and the superficial lymph node groups, and especially the nerves and testes, are comparatively seldom or rarely affected by tuberculosis.

The *reciprocal relationships* of the two diseases in the same person are also peculiar. Leprosy seems to favor tuberculous infection, as indicated by the high frequency of deaths from tuberculosis among lepers, and the not infrequent localization

of tuberculosis in the lymph node groups most affected by leprosy. On the other hand, tuberculosis seems antagonistic to leprosy; the latter shows no tendency to localize in tuberculous tissues, and as tuberculosis progresses clinically leprosy typically and markedly retrogresses.

An inquiry into the incidence of the two diseases in the provinces of the Philippines has failed to show any typical *incidence relationship*. That is, so far as the figures show there is no clear tendency for leprosy to be less where tuberculosis is marked, or vice versa, though there are certain interesting points that might be investigated with profit.

## POLITICS AND PUBLIC HEALTH OFFICERS

By ANTONIO V. FERNANDEZ, A.B., M.D.

*Medical Inspector P.H.S.*

The topic I have selected is a very delicate one. Should the public health officers meddle with politics or not? As it is against the Civil Service Rules to enter into the arena of politics, we have always tried our best to be out of its influence. But however great our effort is to be out of each influence at one time or another we are caught in the meshes of politics wittingly or unwittingly. We cannot deny that there is a very close relationship between politics and public health officers. The prohibition by the Civil Service for any civil service employee to enter politics is not a reason for as not to discuss here in our assembly the relationship between politics and public health officers. On the contrary, it is for this same reason that we should discuss it, in order to get or interchange opinions that may help us formulate the best conduct we should follow with regard to politics.

The success of the administration of a district health officer depends upon the financial status of the district or province and his tact to deal with the provincial and municipal public officials in particular and the community in general. If the health fund is insufficient due to a poor financial standing of a province, a district health officer cannot undertake any permanent sanitary improvement. All what he can do is the improvement of the sanitary conditions of the district. He may not even be able to procure money enough for quinine or disinfectant for the whole province. Under this circumstances the district health officer may recommend to the provincial board or municipal council the approval of some special appropriations from the general fund in order to carry out his administration to a successful end. If the district health officer stands well with the provincial board or municipal council such recommendations will be approved, but if he is not in good term with the said officials the answer will invariably be "no funds." A district health officer in such straits will be very much handicapped in any undertaking he may consider important in order to improve the sanitary conditions of the district.

It is evident, therefore, that the cultivation of good tact in dealing with the elective public officials who are doubtless powerful in a district and can damage much if they so chooses the efficiency of a public health officer. In one's effort to befriend public officials, he has to sacrifice occasionally his pride and comply with certain requests of these elective officials even if these requests are contrary to one's convictions for the best interests of the service. I would like to give some examples: A provincial governor requests a district health officer to appoint a certain applicant who belongs to his party for the position of a sanitary inspector instead of the other applicant who belongs to the opposite party but whom the district health officer considers the better applicant. Thus, a district health officer is put in a dilemma. Should he follow the dictates of his conviction, that is, to appoint the better applicant in order to raise the standard of efficiency of the health personnel but incur the displeasure of the provincial governor or comply with the request in order to secure the coöperation of the same? The same public official may request the transfer of a health personnel from one place to another for some political reasons of his own. We have to admit that there are public officials who abuse confidence or comradeship by asking certain requests that are beyond the limit of propriety. The moment a district health officer refuses to comply with such requests even when sufficient reasons are given, he falls from the good graces of such public officials. It is clearly shown that a public health officer whether he likes it or not he is thrown into politics, for in my way of thinking to mingle or reciprocate favors with elective public officials even if those favors are official is to meddle with politics. Once a public health officer has incurred the displeasure of the provincial board for instance, the former will meet numerous obstacles in his administration and the consequence is that the public health officer is transferred to another district. If the said public health officer insists in his policy, he will most probably meet the same fate. The worst part of a public health officer's life comes when election days are approaching. If the latter has been in good relations with the elective officials, especially if there has been reciprocations of favors, the elective officials expect the health officer to help them in their reëlections. For there is no doubt that the public health officers as a whole is some factor to be considered during election days. Now if a health officer maintains the attitude of a neutral as is proper for him to do he will be suspected as favoring the opposite party.

Whichever party is successful, he is considered as belonging to the opposite party. In most of the time it is almost impossible for any one to be on the fence, so to speak. You have to be with one party or another, whom you consider can help your administration.

Speaking of transfers of health officers from one division or district to another on account of political troubles is not conducive to efficiency, because the said officials have to begin over again in their task of capturing the sympathy of the community in general, while if they are kept in the same place there is always a chance to patch up differences. It should be remembered that elective public officials are changed every 3 years. A public health officer who is working conscientiously for the public good will sooner or later gain the confidence of the whole community, thus securing better coöperation from the public, for we have to remember that in the improvement of the sanitary conditions of the community the coöperation of the public is of paramount importance. Transfers on account of political quarrels are not, therefore, adviceable, for political differences cannot be avoided and are bound to occur during the administration of a public health officer. Allow him, therefore, to stay in a place for years to gain more friends thru good tact or dealing with the community and thru his professional services, so that his efforts for a healthier nation will be more successful.

In conclusion, I would like to state that inasmuch as the health officers are always with elective public officials or politicians and are more or less in the meshes of politics, opinions be given here the propriety or impropriety of the restriction by the Civil Service for the health officers or health personnels to enter politics. I am also against frequent transfers on account of political quarrels.

# TRACHOMA CONTROL AMONG THE SCHOOL CHILDREN

By Dr. PEDRO A. RODRIGUEZ

*Senior Surgeon, Philippine Health Service*

## HISTORICAL

One of the public health problems which the Philippine Health Service has to face today is the control of trachoma in the Philippines. According to statistics trachoma in the Philippines is prevalent, not well controlled, and apparently is spreading in many regions. Before taking up the question of trachoma control in Mindanao and Sulu, let us review briefly the subject of trachoma as it stands today.

Trachoma is an ancient disease which probably existed many thousands years ago, but little attention has been paid to its recognition until 1798-1808, when it was introduced into Europe by the French and English soldiers returning from Egypt after the Napoleonic expedition. It was disseminated among the civilian population by the discharged soldiers affected with the eye disease.

According to the report of Doctor Alberto on Trachoma and its Prophylaxis to "Primera Asamblea Regional de Médicos y Farmacéuticos de Filipinas" in 1912, the occurrence of trachoma in the Philippines was rather infrequent. He believed that the disease was imported by aliens and that there was no focus of infection in the Philippines. But according to Senior Medical Inspector Griffin of the Philippine Health Service trachoma existed in the Philippines even before the Spanish time.

Altho trachoma is as old as the Koran, yet its occurrence among the natives of Mindanao and Sulu has been a comparatively recent discovery. The first record of its kind in Zamboanga was in 1919, when three cases of trachoma were treated at the Zamboanga General Hospital. In 1917, there were ten cases of trachoma treated at the Sulu Public Hospital. There were about ten cases of trachoma registered among the school-children in Davao in 1918. Its existence in Cotabato was known only in 1919, when fifty-three cases of trachoma were treated at the Cotabato Public Hospital. The first cases of trachoma recorded in Agusan were in 1920. The record of the



office of the district health officer of Surigao shows that the first cases of trachoma have been reported only in 1920. In some provinces of Mindanao and Sulu approximately 10 to 15 per cent of the school-children are affected with trachoma.

TABLE I.—*Record of date of trachoma as found in the following provinces*

Provinces	Year	Cases
Manila (city).....	1911	700
Sulu.....	1917	10
Davao.....	1918	10
Zamboanga.....	1919	3
Cotabato.....	1919	53
Surigao.....	1920	42
Agusan.....	1920	36

#### NATURE OF THE DISEASE

Trachoma is a dangerous contagious disease of the eyes, which first affects the eyelids, causing thickening and destruction of the conjunctive and formation of granules. It is a long standing disease, generally extending over a number of years. It may begin suddenly or the onset may be so insidious that the patient is not aware that there is anything at all wrong with the eyes. It may cause serious damage before it attracts attention. It persists for years, and if not properly treated, practically always results in serious damage to the vision. The impairment of vision ranged from comparatively slight defect to total blindness. While blindness often results from trachoma, it is now recognized that possibly it is not the worse feature of the disease. We know that it lasts for years with constant irritation and discomfort to the patient, impairing his earning capacity, ruining life and happiness of entire families, and finally terminating in total blindness. The complications that occur are numerous and damaging and include keratitis and blepharitis, destruction of the lids known as entropion and ectropion. When the ectropion is marked, the eyelashes rub against the cornea producing ulceration and opacity. In this manner sight is involved and, ultimately, vision may be lost.

#### CAUSE OF TRACHOMA

The exact etiology of trachoma is still unknown, altho tremendous amount of research work along this line has been carried out. Some investigators believe that trachoma is not caused by microorganisms, while others claim that they found certain organisms. Cohen and Noguchi think the cause of trachoma is a non-identified virus. Prowasek and Halberstadter, while

working in Java, found certain cell inclusion from the smear of trachomatous eyes. However this finding is inconclusive, inasmuch as similar inclusions have been found from gonorrheal pus and sometimes in the genital discharges of those suffering from inflammation of the parts.

Despite occasional assertion to the contrary, there is no doubt that trachoma is transmissible from sick to well by the discharges of the eyes. This can occur in many ways, such as the use of common basins, handkerchiefs, bed clothes, or towels. The use of the same towel more than one person is the easiest way to convey infection. Children at school may also convey the infection to other by exchanging or using the same books, pencils, papers, clothes, toys or in playing games by blindfolding each other with handkerchiefs.

#### TRACHOMA CONTROL IN OTHER COUNTRIES

Campaign against trachoma in the United States began in 1897 in the immigration service. During 17 years all arriving aliens have been carefully examined for trachoma with a view to the exclusion of those infected.

The Surgeon-General of the United States Public Health Service has recommended the establishment of small hospitals for the treatment of trachoma as being the best means of combating this disease. According to the report of the Surgeon-General of the United States Public Health Service, in 1920, five trachoma hospitals have been established. Since these trachoma hospitals have been opened, between nine and ten thousand cases of trachoma have been treated at the hospitals. There have been 55 field clinics conducted at which 20,882 persons of all ages were examined. There were 1,526 operations performed, 1,156 of which were performed under general and 370 under local anesthesia.

Among the requirements set forth by Kerr for the improvement of trachoma condition in England are the elimination of foci of the disease and the improvement of the community sanitation. It is said that trachoma is largely a disease of insanitary surroundings, and their abolishment will depend in a great measure in improving the social and economic condition in infected communities. In bringing about these improvements, the education of children in individual prophylaxis is essential.

Canada followed the example of the United States and instituted inspection service. In some Argentine states, the provisions for inspection and exclusion of immigrants being more or less loose. In Amsterdam the committee to seek out the foci

and suggest ways and means for effectual campaign against trachoma recommends the examination of all children at the fifth year and further examination every year of those recorded as having trachoma. The committee does not advise compulsory treatment, but merely the children recorded as having trachoma should not be admitted to school without a certificate that they have been treated.

#### TRACHOMA CONTROL IN THE PHILIPPINES

Our plan of control of trachoma in the Philippines is similar to that of Amsterdam. Here the only sanitary measures required for its prevention and control is to exclude those pupils suffering from trachoma from the school and in some cases required to report to the dispensary every day for treatment. Altho there were several cases of trachoma operated on in the different hospitals in Manila, yet the Philippine Health Service has not yet adopted this method as a sanitary measure to wipe out the foci of infection. In the Philippines, like in Amsterdam, the treatment among the school-children is not compulsory, but are excluded from the school and are required to present a certificate that they have been cured either by the family or school physician before admission to the school.

The Immigration Law in the Philippines with reference to dangerous communicable diseases required that those who are found suffering from trachoma coming from foreign ports should be excluded and present certificate to the quarantine officer that they have been cured by any reputable physician.

The present method of control in the Philippines is not efficient and a more radical one is required. The plan of establishment of trachoma hospitals and free clinics in the outlying districts where trachoma is prevalent similar to that recommended by the Surgeon-General of the United States Public Health Service should be followed. The hospitals will not be used merely as centers for treatment of this disease, but for instruction and educational purposes in eradication.

#### TRACHOMA CONTROL IN MINDANAO AND SULU

The first indication for the control, suppression and eradication of trachoma in Mindanao and Sulu began in Zamboanga in 1920, when forty-five positive cases of trachoma were excluded from the school and operated on in the Zamboanga General Hospital. Following that year more systematic examination of school-children was undertaken. A free clinic for the treatment of this disease was held at the hospital. The teachers and parents of those who were suffering from trachoma were

notified and the trachomatous pupils were excluded from the school and advised to undergo operation either by the family or the resident physician detailed to that kind of work. Those incipient or suspicious cases were not excluded or operated on, but were simply required to report at the dispensary for treatment every day outside of the school hours until they are cured. After a period of three weeks or more treatment a certificate was issued to the principal of the school to the effect that the pupil concerned has been cured.

TABLE II.—*Condensed report of hospital cases in Zamboanga*

	1919	1920	1921	1922	1923
Total admitted.....	0	45	64	162	99
Operation performed:	0	45	64	162	99
Expression and grattage.....	0	45	64	162	99
Ptyregium.....	1	6	3	3	4
Extraction, cataract.....	0	3	0	0	1
Decision, cataract.....	0	0	0	1	0
Removal of foreign body.....	3	2	3	5	4
Tonsillectomy.....	1	12	11	3	7
Anenoidectomy.....	3	1	1	1	1
Dacryocystectomy.....	0	0	2	2	0
Mastoidectomy.....	0	0	0	0	1
General anesthesia.....	0	30	52	150	75
Local.....	0	15	0	12	24

*Report as to hospital.*—The clinic was in operation from 1920 to 1923, usually from August to November inclusive, a period of about four months every year. Out of 11,312 school-children examined in different schools in Zamboanga from 1920 to 1923, 570 of which were diagnosed as trachoma, 557 as suspicious, 10,849 were found to be negative, and 337 show evidence of follicular conjunctivitis. During this time that the clinic was in operation there were admitted to the hospital 370 trachoma cases. A total of 370 trachoma operations were performed, 334 under general, and 36 under local anesthesia.

The operative procedure followed by this hospital is as follows:

After the patient is etherized the upper lid is everted and seized with eyelid forceps. The granules of the lid were first expressed or squeezed with suitable forceps (Knaps, Noyes, or Kunts). Followed by brushing or rubbing the granules on the conjunctiva with gauze wet with bichloride of mercury (1:500) solution (grattage of brossage), until the lids are free with granules, care however, being taken not to injure the cornea and lacerate the conjunctiva. The lower lid is treated the same way. After the operation argyrol is instilled into the eyes and eye pad applied. The after treatment consists in cleansing the eyes with boric acid and instillation of 2 drops of argyrol 15 per cent every three hours for about one week. After the swelling has subsided, the lids were cauterized with copper sulphate stick for about two weeks.

During and after these clinics no bad result of operation were recorded except some recurrence and synechia. The percentage of recurrence is comparatively low. Of the 370 operated on for trachoma there were 19 recurrences. A number of those operated on were requested to return for further treatment and examination thereafter all were found to have healed conjunctiva. Some of those who did not return the result could not be verified.

There was very little opposition on the part of the patients and parents as to their treatment after explaining to them the harmful effects of trachoma. The large number of patients applying for treatment overran the hospital and it was necessary to keep a waiting list and notify them when they could be admitted for treatment. The response was immediate and most unusual; the patients came in when told and cooperated in every way for the successful handling of a such large clinic. From start to finish the clinic proved to be exceedingly busy one, and the doctor and nurses on duty practically all the time, as it was unusual to have more than 100 dispensary cases during the day in addition to the operative work, which was usually done in the early afternoon.

#### FUTURE PLAN OF CAMPAIGN

Because trachoma is a highly contagious disease, a menace to the public health, and produces many harmful effects to the vision, the Philippine Health Service of Mindanao and Sulu particularly, and the Philippine Health Service in general is, therefore, called upon to take an active campaign for the eradication of this malady. It is the duty of every man, woman, and child to join in this campaign. Every case of this disease could be prevented if everybody cooperates.

The Philippine Health Service should detail officers and nurses experienced in trachoma work and hold clinic in every municipality at certain time of the year, preferably during the school year. The municipality should provide the building and pay all the expenses incident to the clinic. While it is impossible to give in advance any accurate estimate to the amount needed, it is suggested that an appropriation of ₱500 will be a good start.

To run a trachoma clinic is inexpensive. A small supply of gauze, absorbent cotton, ether, cocaine 2 per cent, boric acid, argyrol, and copper sulphate are the only materials needed. One eyelid and one thumb forceps, a horn plate and a grooved director

are the only instruments required for expression and grattage of trachoma.

The future plan of campaign in the forty-fifth Health District of Mindanao and Sulu for the prevention and control of trachoma if appropriation permits include the following:

1. Survey not only of school-children but also of employees and other group in district where trachoma is known to prevail and later all over the province for present indication point to its general distribution.

2. Follow-up work in families where one case has been found, to learn whether there are other cases and to instruct in measures designed to prevent further spread of the disease.

3. Free distribution of educational bulletins regarding the prevention of trachoma.

4. Establishment of trachoma hospital at important points, where all cases may receive free treatment.

5. The common use of towels and basins in dormitories, hospitals and factories should be prohibited.

6. Strict adherence to physical examination of eyes of immigrants as required by immigration law should be strictly followed.

7. Holding of barrio clinics by doctors and nurses in the neighborhoods of the hospitals whenever they could be spared from the hospital duties.

8. Research and investigation into etiological and epidemiological phases of trachoma.

9. The following directions as recommended by McMullen of the United States Public Health Service should be printed on card and distributed free to all schools, colleges, dormitories, asylums, prisons, and factories as guide to prevent the spread of trachoma.

#### (A) HOW TO AVOID CONTRACTION OF TRACHOMA

1. Do not use the common family towel especially in homes where there are cases of trachoma.

2. Have a towel and handkerchief of your own and don't let anybody else use them.

3. Always make sure that the washbasin is clean before you use it.

4. Do not sleep with the persons who have "sore eyes" nor use bed clothes which have been used by them.

5. Do not wear clothing of persons who have "sore eyes" nor use their eating utensils without previous cleansing.

6. Boil the handkerchiefs, etc., of persons have "sore eyes" and do not touch their faces.

7. Advise persons with sore eyes to have them treated at once to the eye clinic.

#### (B) ADVICE TO THOSE HAVING TRACHOMA

1. Apply at once for treatment to the nearest hospital, dispensary, or to your physician.

2. Follow the directions of the doctors and nurses as to the treatment and preventions.

3. Do not stop treatment until you are cured.

4. Wash the face and hands several times a day and keep the fingers nails clean.

5. Have your own basin, soap, and towel.
6. Boil your handkerchiefs before adding them to the wash.
7. Do not allow your clothing or bedclothes to become soiled with the discharges (pus from your eyes).
8. When your eyes are discharging pus collect the discharges on clothes which can be burned and stay away from the members of the family as much as possible.

The work of eradication of trachoma is expected to take years, but eventually it will yield to scientific treatment. With time and efforts trachoma menace can be exterminated like any other communicable disease. I believe time is not far distant when we will be able to say that trachoma is no longer a public health problem in Mindanao and Sulu, if the plan outlined above could be carried out. Such is the worthy of our best efforts.

TABLE III.—Summary of trachoma in Zamboanga from 1919 to 1923

Items	1919	1920	1921	1922	1923
<b>DISPENSARY</b>					
Total dispensary cases.....	3	168	268	577	673
Average daily attendance.....	0	28	44	96	112
Total treatment given.....	11	2,352	2,680	5,770	6,730
Cases cures.....	3	140	200	400	452
Acute conjunctivitis.....	0	20	21	80	8
Chalazion.....	0	7	5	7	0
Hordoleum (stye).....	1	12	7	23	2
<b>HOSPITAL</b>					
Total admitted.....	0	45	64	162	99
Operations performed.....	0	45	64	162	99
Expression and grattage.....	0	45	64	162	99
Pterygium.....	1	6	3	3	4
Extraction, cataract.....	0	3	0	0	1
Dielision, cataract.....	0	0	0	1	0
Removal of foreign body.....	3	2	3	5	4
Adenoidectomy.....	3	1	1	1	1
Tonsillectomy.....	0	0	2	2	0
Mastoidectomy.....	0	0	0	0	1
General anesthesia.....	0	0	52	150	75
Local.....	0	0	0	12	24
<b>SCHOOL EXAMINATION</b>					
Number of examinations held.....	16	23	17	22	21
Children examined.....	1,196	3,604	1,594	3,015	1,908
Trachoma cases found.....	4	69	128	224	145
Suspicious trachoma.....	0	31	137	180	209
Conjunctivitis follicular.....	0	20	5	71	241
Acute conjunctivitis.....	1	39	0	8	8

### BIBLIOGRAPHY

1. Primera Asamblea Regional de Médicos y Farmacéuticos de Filipinas, Vol. I, No. I, 1912.
2. The Ohio Public Health Journal, Vol. X, 11-12.
3. U. S. Public Health Reports, 1915.
4. Treasury Annual Reports, U. S. Public Health Service, 1919-1921.
5. Journal, American Medical Association, Vol. LXVII, 1916.
6. Journal, American Medical Association, Vol. LXVIII, 1916.

## MISCELLANEOUS

### AGUSAN

The general health condition of the province was fair during the month. In spite of the flood, there was no epidemic of any communicable disease. However, the incidence of gastro-intestinal diseases, was slightly increased. In order to eradicate the disease, intensive campaign of house to house inspection was conducted.

The recent flood which inundated several places of the province had caused enormous destruction of farm crops. Due to continuous rainfall during the month, the sanitary work was greatly hindered and as a result thereof many sanitary improvements so far made were thus destroyed. The towns bordering the banks of the river were stricken hard by the recent flood, and have suffered the greatest crop losses. The people seldom visit the towns, being compelled to stay at their homes to make necessary repairs and improvements in their farm-fields, thus leaving the sanitary work in the poblacion suspended. It is believed that it will take months before the condition of the province will be restored to its normal condition.

### ALBAY

Due to bad weather, only 72 persons in Catanduanes were given neosalvarsan injections for yaws. Upon improvement of weather conditions, this work will be intensified.

Much time and attention has been devoted to smallpox vaccination. The regular vaccinating party, consisting of six provincial sanitary inspectors, vaccinated 1,688 persons in Tabaco and 1,330 in Tiwi, a total of over 3,000. Another vaccinating party composed of 3 provincial sanitary inspectors, was detailed to the barrios bordering the West Coast, with orders to start their campaign at the Camarines Sur border and move down the coast until they reach the Sorsogon boundary. Their report which has just been received shows that they had vaccinated 636 persons. In the municipalities, the local sanitary inspectors are devoting most of their time to vaccination, particularly in far distant barrios.

Dr. Sulpicio Chiyuto, chief of Culion Leper Colony, who was bound for Sorsogon, arrived on February 7, 1927. He left the following day.

### ANTIQUE

Dr. Sulpicio Chiyuto arrived in this province and conferred with this district health officer about the provincial leper detention camp. Location of the proper site for the proposed leper detention camp was decided upon by Doctor Chiyuto, the district health officer and the municipal president of the provincial capital.

### BATAAN

An investigation of some typhoid fever cases occurring from July, 1926, to January 31, 1927, was conducted by the president of the Second Sanitary Division in the municipality of Pilar.

The district was honored by the visit of the Honorable, the Secretary of Public Instruction on February 7, 1927, who was on inspection trip. He made an inspection of the public dispensaries and general health conditions of the municipalities of Hermosa, Orani, Samal, Abucay, Balanga, and Orion. Judging from the attitude of the high visiting official during his survey, the district health officer is led to believe that he was favorably



impressed by the sanitary condition and activities of the public dispensaries, and of the general health condition of those municipalities inspected, although two municipalities, namely, Orani and Hermosa, were found short of quinine. However, this irregularity was explained by the fact that the requisition made on January of this year had not as yet been received.

#### BATANGAS

There were 35 conferences most of which were given in the barrios. Five schools of the province were inspected and 463 school-children were given physical examination. About 126 persons were given injection with pure cholera, while 351 persons received mixed vaccination. A campaign for the eradication of waterborne diseases (dysentery and typhoid) in Batangas and Lipa was undertaken.

The general mortality rate of the province has decreased from that of last month's record. This apparent decrease indicates that the present health condition of the district is quite good and is now returning to normalcy. This may be attributed to the decrease of deaths from prevailing diseases and other causes.

Infant mortality rate has, however, increased slightly during the month.

There are but few cases of common communicable diseases registered by sanitary divisions during this month to wit: amoebic dysentery: Bolbok, 2-1; Bacillary dysentery: Batangas, 6-1; Typhoid fever; Lipa, 4-4; Taal, 1-1; and Influenza; Lemery, 1-1; Lipa, 2-2; Tuy, 1-1. Proper sanitary measures have been taken.

#### BOHOL

Extensive inspection trips have been made during the month, including inspection of varicella cases in the municipalities. Vaccination campaign has been performed by sanitary inspectors. There were in all, 37 cases (all mild in form) registered in Valencia 18-0; Tubigon, 4-0; Anda, 4-0; Jagna, 4-0; and Carmen, 3-0. There was one case of amoebic dysentery registered in Jagna. The patient is an adult 32 years old. Precautions and necessary measures were duly taken to prevent further infection. No other cases were reported.

#### BULACAN

The municipal Council of Pulilan has raised its contribution from 6 to 7 per cent to meet the necessary appropriation incident to the promotion of its sanitary inspectors.

Sibul Springs is now ready to accommodate visitors for this coming dry season.

#### CAVITE

One of the most important work accomplished during the month was the vaccination campaign of mixed cholera and typhoid vaccine in the 2nd, 4th, 5th, 8th, and 9th Sanitary Divisions, comprising twelve municipalities out of the twenty municipalities of the province.

#### CAMARINES SUR

During the month of February, the towns of Calabanga, Magarao, Tigaon, Goa, San Jose, Lagonoy, Nabua and Iriga were inspected. The health condition of the division is normal.

## CAPIZ

Doctor Chiyuto, chief section on Leprosy, arrived here on inspection trip, during the later part of February. The preparation for the non-technical training period of the personnel in this district has been undertaken.

The repair of the provincial leper detention camp is now being made. The treatment of detained lepers is as usual continued. A campaign against dysentery in some municipalities has also been pushed on more vigorously.

## CEBU

The district health officer in company with Mr. Mildiezes of the Rockefeller Foundation, who is working under the Malaria Control Section, P. H. S., went to Tabunoc, Talisay, to collect larvæ of *Anopheles* mosquitos. Larvæ of the *minimus* and *barbirostris* type were collected.

During February several cases of influenza with some deaths have been registered among the different municipalities of this province, but the disease however has not developed in an epidemic form. Incidence of varicella and amoebic dysentery has also been reported. The general health condition of the whole district is satisfactory. The general mortality rate is lower than the same month corresponding to the previous year.

## COTABATO

The district health officer devoted most of this time to the supervision of preventive campaign work especially to anti-variolic vaccination. This campaign work was made possible thru the coöperation extended by the provincial governor and his assistants.

Dysentery of the amœbic type in an apparently epidemic form has threatened the capital of the province, but through the close supervision and control of water, market, and other public places where water is being offered for public use, the disease was entirely checked. Dysentery is still prevalent in some outside districts, such as Maganao in Lebak, Buluan, and Dulawan.

Measles still appears in sporadic form in several districts. The disease is common among children of school age. Routine measures were taken for its eradication.

The malarial survey is being undertaken along the Southern Coast of the province. It is expected that the party will return to Cotabato towards the end of this month, after which they will be directed to survey the agricultural colonies. This office had already made recommendations pursuant to the provisions of Service circular to the provincial board to set aside the amount of ₱5,000 for the maintenance of malarial control in Kiamba, Kling, Lebak, Glan, and Pinaring for the current year but no action has been taken up to this time.

Cases of influenza appeared in sporadic form in various places of the province, but the incidence of the disease does not warrant any intensive work for there is no death registered yet so far.

The vaccination campaign against smallpox is being intensified as much as possible, thru the coöperation of the provincial governor, despite the actual condition of the province. So far the opposition encountered during past years, can still be noticed. There are still some Mohammedans who are opposed to vaccination, and the matter will be brought to the attention of the authorities concerned.

## ILOCOS NORTE

Coinciding with the town fiesta of Laoag, the provincial fair was held and in which this office has participated. Dispensary articles, instructive posters, a model sanitary house, were exhibited.

A campaign was conducted in all municipalities to secure allotment for more extra fund for health activities, as well as to include in the present year appropriation of an amount sufficient for drilling sanitary surface wells in localities without artesian wells facilities. The result of the campaign was encouraging.

The public dispensaries under construction are going very slow. This is due to lack of laborers and materials. By April or May, both Bangui Public Emergency Hospital and Batac Public Emergency Hospital will be completed. On the other hand, and emergency provincial hospital is being pushed thru. The building is located at the back of the provincial capitol building and shall be finished by next April. The building provides an adequate office for the district health officer, a laboratory room, a ward for six beds, one operating and sterilizing room, one dispensary room, a kitchen, a dining room and toilet facilities.

## LAGUNA

The emergency hospital at San Pablo will be a reality in the near future, due to the enthusiastic support of the municipal officials and the provincial treasurer. The adoption of the Antipolo closet system in Paete is doubtful without the intervention of the Executive Bureau.

## LANAO

Acting upon instruction of the Central Office, regarding extensive vaccination against smallpox among the nonchristian population of this province and upon recommendation of the Governor-General thru the provincial governor, the district health officer, devoted most of his time during the month in conducting a vigorous campaign against the disease along the coast. Several conferences were had with the provincial governor and interviews with important datus of the different Moro districts in order to insure an extensive and successful vaccination throughout the Moro regions and to gain the confidence and personal safety for vaccinators. To this end the district health officer has attended Moro fiestas and other gatherings, advertising and explaining to them the importance and necessity of vaccination.

## LA UNION

The La Union Provincial Fair and Exposition was held during the month. Sanitary measures which consisted in the appointment of 6 sanitary inspectors and 3 nurses specially detailed were taken. A Philippine Health Service booth and emergency hospital have been constructed. Public closets were supervised and a public sanitary drinking water was installed.

The general conference of presidents of sanitary divisions took place in the 23rd. Doctor Aguilar was in attendance and gave an instructive lecture.

In the joint assembly of municipal presidents and municipal treasurers and chiefs of police, the district health officer has appealed for the co-operation of the different officials with the health officials in the enforcement of sanitary laws and ordinances.

### LEYTE

During the month the sanitary personnel of the subdistrict of Leyte, has devoted itself to routinary inspection of houses, premises, closets, public markets, water supplies and other places. Investigation by the personnel showed 7 cases of bacillary dysentery with no deaths; cases of "diarrhea and enteritis," were reported.

### MINDORO

The school children of Abra de Ilog and Baco were examined by the district health officer. During his inspection trip in these places, it was found out that almost all of the school children of Abra de Ilog have enlarged spleens of varying degree, while one pupil only in Baco was found to have his spleen enlarged. However, the school children were found to be free from communicable diseases.

This Office took part in the Garden Day held at Calapan from February 24 to 26, 1927 where the public schools of Calapan, Naujan, Puerto Galera, Baco, and Pola participated. An emergency booth was constructed and the equipments of the dispensary were exhibited together with some posters, diagrams, sketches, etc. The booth was also used as an emergency hospital during these days. The inter-provincial athletic meet between the Provinces of Mindoro, Masbate, Marinduque, and Romblon was also held in conjunction with the Garden Day.

### MISAMIS

Twenty-two sanitary inspectors were assembled at the capital to attend the eight-hour daily classes. All topics scheduled in the program, were developed and given to the sanitary personnel in the simplest form possible. General defects usually encountered in the performance of their duties, were called also to their attention, giving them accordingly the proper correction. The responsibility of public servants and of the patriotic nature of their duties were impressed upon them. The sanitary personnel were entertained in social gatherings, and it may be assured that this first assembly had given them encouragement, knowledge and more consciousness of their responsibility. At their departure, everybody was given the necessary supplies for his respective offices and dispensary. The district health officer has conducted the representative of the Rockefeller foundation to make some survey of the Anopheles mosquito-breeding places in some barrios in Cagayan.

### NUEVA VIZCAYA

Thirteen health lectures were given with an attendance of 606 persons; there were 243 patients treated by the sanitary inspectors alone; 396 persons were vaccinated with the antismallpox vaccine of which 361 were inspected. Of the total inspections of vaccinations there were 42.38% found with positive results.

Influenza and malaria were the prevailing diseases recorded during the month. Proper ways and methods of preventing these diseases as well as their necessary treatments were taught and demonstrated to the local sanitary inspectors in the different municipalities of this district.

## OCCIDENTAL NEGROS

Two temporary leper detention camps in the municipality of Sagay were constructed. The houses are of light materials and the expenses incurred were taken from the municipal general fund.

## ROMBLON

All the sanitary inspectors of the province were assembled at the office of the district health officer from February 21 to 24, 1927, in order to give them special training in connection with sanitary measures for the control of measles.

## SORSOGON

There were 203 patients who were treated in the public dispensaries including those attended by the district health officer in his office during the month. Fifty-four injections of ethyl-ester of chaulmoögra with iodine were given.

Dr. Sulpicio Chiyuto, chief of the Culion Leper Colony, arrived in Sorsogon on February 9, 1927. The Pinaculan Island and the lepers in Tahiran Island on February 10, 1927, were inspected by him and the district health officer. On the day of his arrival, a conference with the acting provincial treasurer about the provincial aid of Sorsogon for the construction of a leper treatment station building was held. Doctor Chiyuto left Sorsogon on February 11.

## SURIGAO

There is a slight general increase of mortality in the province due to influenza and bronchitis, altho no reliable data are available from which to ascertain the number of deaths. This is attributed to the peoples' reluctance to report all the cases, as they consider the illness common and very mild ones.

Sporadic cases of amœbic dysentery were also registered in the main towns of Surigao, threatening to spread in epidemic form. Investigation is still going on to determine the source of infection. All cases reported are daily visited and proper treatment given.

Dysentery epidemic in Bohol. Libjo was reported during the last part of January and early days of February. The source of infection was apparently the drinking water supply located on the bank of a stream. The disease is now under control.

Slight increase of mortality in all the municipalities were being observed due probably to the influenza which appeared epidemic form altho due to the mild nature of the disease the people seldom report the cases to the health office. A house to house inspection is done daily in Surigao and other municipalities to detect the cases but this same measure can not be applied to the barrios on account of the distance and difficulties of transportation.

Dysentery also broke out in the main town of Surigao threatening to spread in epidemic from the actually the health personnel is working hard to control the disease.



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of February, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1927<sup>1</sup> BY NATIONALITIES

Nationality	Population
Americans.....	3,184
Filipinos.....	294,187
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>320,394</b>

### BY DISTRICTS

Districts	Population
<b>No. I. MEISIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,538</b>
<b>No. II. SAMPALOC:</b>	
4. Santa Cruz.....	52,238
5. Quiapo.....	15,862
6. San Miguel.....	4,434
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,232</b>
<b>No. III. PACO:</b>	
8. Port Area.....	4,816
9. Intramuros.....	14,625
10. Ermita.....	16,189
11. Malate.....	16,471
12. Paco.....	16,087
13. Pandacan.....	5,861
14. Santa Ana.....	6,675
<b>Total.....</b>	<b>80,624</b>
<b>Gand total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis on last figures published by the Census Office.

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS FEBRUARY, 1927**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	762.47	24.4	32.1	2	17.1	2	26.6	27.2
11-20.....	60.82	25.8	34.1	18	19.6	12	27.6	28.2
21-28.....	60.64	26.8	35.8	28	19.6	25	28.2	29.1

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	74.6	81.2	10	68.1	8
11-20.....	73.4	78.2	20	69.2	16
21-28.....	67.7	76.7	21	60.9	24

Date	Prevailing direction	Wind			Atmometer <sup>2</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	E quad	1,429.0	186.5	6	41.9	5.2	2.7
11-20.....	SW quad	1,783.0	225.0	20	52.2	6.7	17
21-28.....	SE quad	1,749.5	297.5	25	56.5	9.3	24

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	52 25	9 30	4	1.9	2
11-20.....	75 00	10 15	20	0.0	0
21-28.....	70 15	9 35	21	0.0	0

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.



# NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	6	4	10	41.62
Filipinos.....	536	496	1,032	45.77
Spaniards.....	1	1	2	6.67
Other Europeans.....	1	1	2	11.58
Chinese.....	31	15	46	33.60
All Others.....	1	5	6	85.80
Total and average.....	574	522	1,096	44.62

# NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I. MEISIC:							
1. Tondo.....	130	124	254	7	8	15	269
2. San Nicolas.....	24	22	46	1	1	2	47
3. Binondo.....	20	16	36	3	3	6	39
Total.....	174	162	336	11	8	19	355
No. II. SAMPALOC:							
4. Santa Cruz.....	68	69	137	3	5	8	145
5. Quiapo.....	22	15	37	2	2	4	39
6. San Miguel.....	7	9	16	1	1	2	18
7. Sampaloc.....	101	77	178	13	5	18	196
Total.....	198	170	368	18	10	28	396
No. III. PACO:							
8. Port Area.....	1	1	2	1	1	2	4
9. Intramuros.....	30	28	58	1	1	2	59
10. Ermita.....	31	18	49	1	1	2	50
11. Malate.....	47	56	103	1	4	5	108
12. Paco.....	26	30	56	2	3	5	61
13. Pandacan.....	13	13	26	1	1	2	27
14. Santa Ana.....	20	17	37	1	1	2	39
Total.....	167	163	320	6	9	15	345
Grand total.....	539	495	1,034	35	27	62	1,096

Attended by physicians, living, 349; stillbirths, 18.

Attended by midwives, living, 69; stillbirths, 2.

Attended by families, living, 683; stillbirths, 18.

# NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	1	1	2	4.16
Filipinos.....	308	276	584	25.90
Spaniards.....	2	4	6	40.08
Other Europeans.....	1	1	2	11.58
Chinese.....	18	8	26	15.34
All Others.....	1	1	2	11.93
Total and average.....	329	286	615	25.04

# NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I. MENJIC:</b>			
1. Tondo.....	107	98	205
2. San Nicolas.....	23	22	45
3. Binondo.....	13	2	15
Total.....	143	122	265
<b>No. II. SAMPALOC:</b>			
4. Santa Cruz.....	45	40	85
5. Quisapo.....	8	11	19
6. San Miguel.....	8	7	15
7. Sampaloc.....	58	47	105
Total.....	119	105	224
<b>No. III. PACO:</b>			
8. Port Area.....	2		2
9. Intramuros.....	6	2	8
10. Ermita.....	10	10	20
11. Malate.....	26	18	44
12. Paco.....	11	13	24
13. Pandacan.....	4	6	10
14. Santa Ana.....	8	10	18
Total.....	67	59	126
Grand total.....	329	286	615

## NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	114	81
Divorced.....		
Widowed.....	22	50
Single.....	257	186
Conditions not stated.....	1	4
Total.....	394	321
Grand total.....	715	

Stillbirths.....	33
Number of deaths with medical attendance.....	451
Number of deaths without medical attendance.....	264

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	103	80	12	9	204
1 year plus.....	46	35	3	3	87
2 years plus.....	17	16	2	1	36
3 years plus.....	6	6			12
4 years plus.....	3	5	1	1	10
5 to 9 years.....	9	4	2		15
10 to 14 years.....	2	2	4	2	10
15 to 19 years.....	8	2	2	2	14
20 to 24 years.....	14	13	7	1	35
25 to 29 years.....	10	17	3	2	32
30 to 34 years.....	16	13	6	3	38
35 to 39 years.....	11	11	3	1	26
40 to 44 years.....	10	14	5	2	31
45 to 49 years.....	11	11	5	2	29
50 to 54 years.....	9	9	1		19
55 to 59 years.....	7	4	1	3	15
60 to 64 years.....	12	7	3		22
65 to 69 years.....	8	7	1		16
70 to 74 years.....	12	7	2	2	23
75 to 79 years.....	5	4	1		10
80 to 84 years.....	6	11		1	18
85 to 89 years.....	3	1			4
90 to 94 years.....		3			3
95 to 99 years.....	1	1	1		3
100 years and over.....		3			3
Age not stated.....					
Total.....	329	286	65	35	715

**NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA**

**[Stillbirths not included]**

[illegible]





## XII. Early infancy

160	Congenital debility, icterus, and sclerema.....	25	11	1	37
161	Premature births; injury at birth:				
	a. Premature birth (not stillborn).....	6	7		13
	b. Injury at birth (not stillborn).....	1			1
162	Other diseases peculiar to early infancy.....	3	1		4

### XIII. Old age

164	Senility.....	11	21	1	33

#### XIV. External causes

166	Suicide by corrosive substances.	1	1	1
170	Suicide by firearms.	1	1	1
182	Accidental drowning.	3	1	1
185	Accidental traumatism by fall.			
188	Accidental traumatism by other crushing (vehicles, railways, landlides, etc.):			
	a. Railroad accidents.	1	1	1
	c. Automobile accidents.			
	g. Landlides, other crushing	1	1	1
196	Other accidental electric shocks.	1	1	1

Total	1	308	276	2	4	1	18	3	1	1	615
Grand total	1	584		6		1	21		2		615

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....	1			2					1				4
9	a. Malarial fever.....			5										5
10	Whooping cough.....			1										1
11	Diphtheria.....	1												1
	Influenza.....													1
20	a. With pulmonary complications specified.....			1										1
29	Leprosy.....			1										1
31	Tetanus.....			1										1
33	b. Others.....			10						1				2
37	Tuberculosis of the respiratory system.....			1	8					1				20
	Tuberculosis of the intestines and peritoneum.....			1	2					1				3
	Disseminated tuberculosis.....													1
43-69	a. Acute.....			1										
	<i>II. General diseases not included in Class I</i>													
44	Cancer and other malignant tumors of the stomach, liver.....			2										2
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....			1										1
55	Beriberi.....			1										1
	a. Infants.....				4									4
62	b. Adults.....			1	1									1
70-86	Diseases of the thymus gland.....			1										1
	<i>III. Diseases of the nervous system and of the organs of special sense</i>													
70	Encephalitis.....			1										1
71	Meningitis.....				1									1
74	Cerebral hemorrhage, apoplexy.....													1
77	a. Cerebral hemorrhage.....			1										1
	Other forms of mental alienation.....				1									1
87-96	<i>IV. Diseases of the circulatory system</i>													
90	Other diseases of the heart.....												1	1





## INFANT MORTALITY

Causes of death	Under 24 hours	24 hours to under 36 hours	36 hours to under 48 hours	48 hours to under 14 days	14 days to under 1 year	Total
9. Whooping cough					2	2
11. Influenza:						
a. With pulmonary complications specified					1	1
29. Tetanus:						
a. Umbilical				1		1
31. Tuberculosis of the respiratory system					3	3
55. Beriberi				6	36	42
56. Rickets					2	2
69. Other general diseases					1	1
71. Meningitis:						
a. Simple meningitis					5	5
99. Bronchitis:						
a. Acute				1	29	30
b. Chronic					7	7
100. Bronchopneumonia:						
a. Bronchopneumonia					24	24
b. Capillary bronchitis					2	2
101. Pneumonia:						
a. Lobar					2	2
102. Pleurisy					1	1
112. Other diseases of the stomach (cancer excepted)					1	1
113. Diarrhea and enteritis					17	17
128. Acute nephritis					3	3
151. Gangrene					1	1
152. Furuncle					1	1
159. Congenital malformations (stillbirths not included):						
b. Congenital malformations of the heart	1					1
c. Others under this title	1					1
160. Congenital debility, icterus, and sclerema	14	3	1	10	9	37
161. Premature birth; Injury at birth:						
a. Premature birth (not still-born)	10			3		13
b. Injury at birth (not still-born)	1					1
162. Other diseases peculiar to early infancy	3			2		5
Total	30	3	1	23	147	204

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set	18,592
Number of rats caught by spring traps	2,710
Number of cage wire traps set	590
Number of rats caught by cage wire traps	4
Number and kind of baits (coconuts)	19,774
Number of poison portions placed	34,852
Number of rats found poisoned	206
Number of rats killed by clubs and other weapons	714
Number of rats found dead from other causes	466
Total number of rats otherwise caught, found dead or killed	4,100
Total number of rats sent to the laboratory for examination	4,100
Total number of rats found positive for plague	0

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total			
	Male		Female		Male		Female		Male		Female					
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths				
I.	4	No. 1.....								4				4		
		No. 2.....												1		
		No. 3.....							1				1		7	
		No. 4.....	3		3						3		4			
II.	4	No. 5.....														
		No. 6.....														
		No. 7.....					1				4	1			4	1
		No. 8.....														
III.		No. 9.....														
		No. 10.....														
		No. 11.....														
		No. 12.....	1	1							1	1			1	1
		No. 13.....												1		
		No. 14.....							1	1			1			
Grand total	12	1	3			1	3	1		12	2	6	1	18	3	

REMARKS:

Cases confirmed as typhoid fever.....	18
Cases confirmed as paratyphoid fever.....	0
By autopsy.....	0
By blood culture.....	0
By Widal reaction.....	3
By urine examination.....	0
By feces examination.....	0
By clinical symptoms.....	15
Cases reported among nonresident persons not included in the table.....	14
Deaths reported among nonresident persons not included in the table.....	4

Typhoid carrier—None.

DYSENTERIES REPORTED DURING THE MONTH OF FEBRUARY, 1927, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
No. 1.....		1						1	1				1	1
No. 2.....												1	1	1
No. 3.....														
No. 4.....														
No. 5.....														
No. 6.....														
No. 7.....			1		1	1	1	1	1	1	2	1	3	2
No. 8.....														
No. 9.....														
No. 10.....														
No. 11.....	1		1	1	1	1	1	1	1	1	2	2	3	2
No. 12.....													1	1
No. 13.....													1	1
No. 14.....	1	1								1	1	1	1	1
Grand total.....	2	2	2	1	2	2	4	3	4	4	6	4	10	8

REMARKS:

Amoebic dysentery.....

Bacillary dysentery.....

Unspecified.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Dysentery carrier—None.

3

5

2

0

0

CHOLERA REPORTED DURING THE MONTH OF FEBRUARY, 1927. CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths
I.....	No. 1.....																			
	No. 2.....																			
	No. 3.....																			
	No. 4.....																			
II.....	No. 5.....																			
	No. 6.....																			
	No. 7.....																			
	No. 8.....																			
	No. 9.....																			
	No. 10.....																			
III.....	No. 11.....																			
	No. 12.....																			
	No. 13.....																			
	No. 14.....																			
Grand total.....																				

REMARKS:

No nonresident case was reported during the month.

Cholera carrier—9.

**DIPHTHERIA REPORTED DURING THE MONTH OF FEBRUARY, 1927, CITY OF MANILA**

**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths				
I.....	No. 1.....	1	1							1	1		1	1
	No. 2.....	1		1						1		1	2	
	No. 3.....	1								1		1	1	
	No. 4.....	2		1						2		1	3	
II.....	No. 5.....													
	No. 6.....													
	No. 7.....	1								1				
	No. 8.....													
III.....	No. 9.....	1		1						1		1	2	
	No. 10.....													
	No. 11.....													
	No. 12.....													
	No. 13.....													
	No. 14.....			1								1	1	
Grand total.....	7	1	4							7	1	4	11	1

**REMARKS:**

Cases reported among nonresident persons not included in the table..... 3

Deaths reported among nonresident persons not included in the table..... 1

Diphtheria carrier—3.

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF FEBRUARY, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	7			
Varicella.....	15	12		
Varioloid.....				
Smallpox.....				
Measles.....	16	28		1
Whooping cough.....	1	1	1	1
Influenza.....	14	8	3	1
Bubonic plague.....				
Encephalitis lethargica.....	1		1	
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	159	194	72	65
Tuberculosis of other organs.....	7	5	7	5
Beriberi, infantile.....	24	14	24	14
Beriberi, adult.....	2	3	1	2

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	55	3	5	
Varicella.....	2	2		
Varioloid.....				
Smallpox.....				
Measles.....	5	2		
Whooping cough.....	1		1	
Influenza.....	2	2	1	
Bubonic plague.....			1	
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	42	29	12	8
Tuberculosis of other organs.....	3	3	2	2
Beriberi, infantile.....		4		4
Beriberi, adult.....		2		1

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF FEBRUARY, 1927**

Sera and vaccines	On hand February 1, 1927	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of the month
Anti-diphtheric serum (units).....	640,000	500,000	1,140,000	400,000	740,000
Anti-dysenteric serum (ampoules).....	23	200	223	149	74
Anti-tetanic serum (units).....	700,000	740,000	1,440,000	640,000	800,000
Cholera vaccine (c.c.).....	26,000	30,000	56,000	29,400	26,600
Dried vaccine virus (units).....	88,500	100,000	188,500	95,900	92,600
Fresh vaccine virus (units).....	215,800	200,000	415,800	166,700	249,100
Gonococcus vaccine (ampoules).....		100	100	100	
Mixed typhoid-cholera vaccine (c.c.).....	14,900	180,000	194,900	151,800	43,100
Streptococcus vaccine (ampoules).....		24	24	24	
Typhoid vaccine (c.c.).....	5,940	44,460	50,400	47,460	2,940

## REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF FEBRUARY, 1927

Health districts	Municipal districts	Vaccinations			Inspections of persons vaccinated								
		Total vaccinations	Previously vaccinated		Unsuccessful	Under 1 year		1 to 4 years		5 years and over		Total	
			Never	Successfully		Positive	Negative	Positive	Negative	Positive	Negative		
No. 1.	Tondo.	454	374	65	15	286	14	10				296	14
	San Nicolas.	114	94	12	8	75	3	2				77	3
	Binondo.	734	92	625	17	49	2	18	1			67	3
	Santa Cruz.	575	191	335	49	196	4	60	7	106	267	362	278
	Quisno.	55	52	3	3	31	3	1	1			32	4
No. 2.	San Miguel.	86	76	8	2	22	1					22	1
	Sampaloc.	567	203	355	9	181	3	2	1	1		184	5
	Port Area.												
	Intramuros.	271	111	143	17	62	10	4				66	10
	Ermita.	124	94	23	7	60	7					60	7
No. 3.	Malate.	139	72	65	2	38		2				40	
	Paco.	58	51	7	7	25						25	
	Pandacan.	25	24	1	1	15	1					15	1
	Santa Ana.	30	30			24						24	
	Total.	3,232	1,464	1,631	137	1,064	48	99	10	107	268	1,270	326

Vaccine virus:  
 Received ..... 9,550  
 Used ..... 6,000  
 Remained ..... 3,550



Health districts	Municipal districts	Number of injections made in—										Total number of injections							
		Adults				Children						Total number of injections							
		First injections		Second injections		Third injections		First injections		Second injections		Third injections		First		Second		Third	
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1. . . . .		1,280		1,633		1,570	16	2,331	4	2,856	5	3,161	16	3,611	4	4,489	5	4,731	
		710		619		685	1	233		188	1	244	1	943		807	1	929	
		601		367		343	7	110	9	96	1	52	7	711	9	463	1	395	
No. 2. . . . .		1,280		961		1,213	34	428	44	389	46	391	34	1,708	44	1,350	46	1,604	
		431		197		103		122		341		5		553		538		108	
		1,100		95		860		729		86		145		1,829		1,040		1,006	
		777		121		351		1,000		820		451		1,777		1,240		802	
No. 3. . . . .		108		113		135		3		2		20		111		115		155	
		863		642		591	2	101		76		128	2	964		718		719	
		189		86		72		292		121		137		481		207		209	
		150		210		264		33		49		509		183		259		773	
		429		356		366	10	216	8	380	1	473	10	645	8	736	1	839	
		443		384		285		162		151		464		605		535		749	
	8,361		6,942		6,838	70	5,760	65	5,555	54	6,180	70	14,121	65	12,497	54	13,018		
	Total																		

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

V., in persons never vaccinated before; R., revaccinations.

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF FEBRUARY, 1927**

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.	{ Tondo.	10	7	2	1	12	8
	{ San Nicolas.	2		2		4	
	{ Binondo.						
	{ Santa Cruz.	5	3	4	1	9	4
No. 2.	{ Quiapo.						
	{ San Miguel.	7	3	3		10	3
	{ Sampaloc.	9	6	4		13	6
	{ Port Area.						
No. 3.	{ Intramuros.	8				8	
	{ Ermita.						
	{ Malate.	6				6	
	{ Paco.						
	{ Pandacan.						
	{ Santa Ana.						
Total		47	19	15	2	62	21

**CONSOLIDATED REPORT OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Total vaccina- tions	Vaccinations		
		Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	1,274	213	399	662
Agusan.....	805	218	170	417
Albay.....	5,961	1,305	633	4,023
Bataan.....	2,497	835	772	890
Batanes.....	70	13		57
Batangas.....	5,048	1,876	858	2,314
Bohol.....	2,405	794	666	945
Bulacan.....	2,778	953	983	842
Bulacan.....	2,966	854	650	1,462
Cagayan.....	20,804	1,864	15,935	3,505
Camarines Norte.....				
Capiz.....	4,709	1,328	1,637	1,744
Catanduanes.....	5,961	1,305	633	4,023
Cavite.....	5,371	1,121	2,285	1,965
Cotabato.....	1,976	584	656	736
Davao.....	5,020	1,407	2,437	1,176
Ilocos Sur.....	2,795	712	347	1,736
Iloilo.....	20,322	4,208	14,298	1,816
Isabela.....	16,961	4,323	10,849	1,789
Laguna.....	3,738	884	1,538	1,366
Lanao.....	7,117	1,452	4,582	1,083
Marinduque.....	2,325	493	912	920
Masbate.....	1,262	511	203	548
Mountain Province.....	5,165	676	4,063	426
Nueva Ecija.....	3,681	1,465	581	1,635
Nueva Vizcaya.....	437	153	39	245
Occidental Negros.....	14,807	4,837	6,964	3,006
Pampanga.....	4,118	967	1,800	1,351
Pangasinan.....	5,945	1,976	962	3,007
Rizal.....	22,895	3,070	19,367	458
Romblon.....	8,272	1,516	5,008	1,748
Samar.....	7,910	1,557	2,493	3,860
Sulu.....	844	477	92	275
Tarlac.....	2,740	673	1,491	576
Tayabas.....	4,413	1,791	823	1,799
Zambales.....	969	413	130	426
Total.....	204,361	46,274	105,256	52,831

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927—Continued**

Provinces	Inspections of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	85	63	223	202	173	409	481	674
Agusan.....	28	24	46	27	122	52	191	103
Albay.....	554	230	674	180	1,360	571	2,588	981
Bataan.....	549	94	711	263	576	132	1,836	489
Batanes.....	18	7	16	10			34	17
Batangas.....	746	277	886	371	687	619	2,319	1,267
Bohol.....	264	69	405	170	560	442	1,220	681
Bulacan.....	721	143	412	216	509	253	1,642	612
Cagayan.....	410	86	626	139	1,023	503	2,059	728
Camarines Norte.....	230	21	1,022	232	7,039	3,467	8,291	3,720
Capiz.....	427	108	541	182	1,661	579	2,629	869
Catanduanes.....	554	230	674	180	1,360	571	2,588	981
Cavite.....	1,055	121	906	265	1,946	1,070	3,907	1,456
Cotabato.....	24	19	107	116	404	263	535	398
Davao.....	33	8	189	45	1,129	428	1,351	481
Ilocos Sur.....	315	99	338	124	466	604	1,119	827
Iloilo.....	646	99	1,517	697	4,443	5,378	6,606	6,174
Isabela.....	522	201	1,689	388	4,553	4,284	6,764	4,873
Laguna.....	438	78	503	226	1,035	1,060	1,976	1,364
Lanao.....	106	6	475	139	1,741	946	2,322	1,091
Marinduque.....	136	40	206	68	704	466	1,046	574
Masbate.....	142	57	185	81	323	142	650	280
Mountain Province.....	268	27	1,190	210	2,663	2,084	4,121	2,321
Nueva Ecija.....	635	209	834	362	523	596	1,992	1,167
Nueva Vizcaya.....	74	50	23	44	82	139	179	233
Occidental Negros.....	724	137	1,180	273	1,887	2,089	3,791	2,499
Pampanga.....	376	88	355	87	849	786	1,580	961
Pangasinan.....	924	294	1,225	507	1,028	995	3,177	1,796
Rizal.....	782	125	1,628	697	3,444	7,933	5,854	8,755
Romblon.....	228	61	982	395	2,300	3,241	3,510	3,697
Samar.....	382	179	732	499	1,241	1,102	2,355	1,780
Sulu.....	42	23	137	44	291	126	470	193
Tarlac.....	218	101	413	218	593	634	1,224	953
Tayabas.....	649	135	1,084	241	1,459	608	3,192	984
Zambales.....	226	109	164	146	74	203	464	458
Total.....	13,526	3,618	22,298	8,044	48,248	42,775	84,072	54,437

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-CHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	4,873	886		5,759
Bataan.....	391			391
Batangas.....	2,796			2,796
Bohol.....				
Cagayan.....				
Catanduanes.....				
Laguna.....				
Lanao.....				
Nueva Ecija.....				
Occidental Negros.....				
Pampanga.....	13,251	2,316		15,567
Pangasinan.....	274	86		360
Rizal.....	954	64		1,018
Tarlac.....	455	58		513
Total.....	22,994	3,410		26,404

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-TYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927 <sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	35	26		61
Bataan.....				
Batangas.....	37	34	29	100
Bohol.....				
Cagayan.....				
Catanduanes.....	7	6		13
Laguna.....	43	50	46	139
Lanao.....				
Nueva Ecija.....				
Occidental Negros.....				
Pampanga.....	165	126	51	342
Pangasinan.....	308	216	122	646
Rizal.....	85	321		406
Tarlac.....				
Total.....	680	779	248	1,707

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927 <sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....				
Bataan.....	258	107		365
Batangas.....	587	64		651
Bohol.....	157	39		196
Cagayan.....	120	88		208
Catanduanes.....				
Laguna.....				
Lanao.....	69	62		131
Nueva Ecija.....	114	60		174
Occidental Negros.....	5,951	3,049		9,000
Pampanga.....	450	189		639
Pangasinan.....				
Rizal.....	2,983	725		3,708
Tarlac.....	104	88		192
Total.....	10,793	4,471		15,264

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF FEBRUARY, 1927.**

No case and no death reported during the month.

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF  
FEBRUARY, 1927.**

No case and no death reported during the month.

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF FEBRUARY, 1927**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
Orders pending, February 1, 1927:				
Minor .....	139	217	69	425
Sewer .....	23	48	1	72
Vacating .....	8	11		19
Filling .....	10	35	19	64
Total .....	180	311	89	580
Orders issued during the month:				
Minor .....	6	8	9	23
Sewer .....		1		1
Vacating .....				
Filling .....				
Total .....	6	9	9	24
Orders completed during the month:				
Minor .....	20	34	8	62
Sewer .....			1	1
Vacating .....				
Filling .....			1	1
Total .....	20	34	10	64
Orders cancelled during the month:				
Minor .....		2		2
Sewer .....		1		1
Vacating .....				
Filling .....				
Total .....		3		3
Orders pending, February 28, 1927:				
Minor .....	125	189	70	384
Sewer .....	23	48		71
Vacating .....	8	11		19
Filling .....	10	35	18	63
Total .....	166	283	88	537
Strong material plans approved:				
New buildings including additions and alterations .....	38	41	49	128
Permits for minor building constructions:				
Approved .....	51	30	18	99
Disapproved .....	5	3	2	10
New buildings completed .....	18	23	19	60
Permits for light and mixed material constructions:				
Approved .....	11	38	20	69
Disapproved .....	2	4	3	9
Prosecutions:				
Convictions .....				
Dismissals .....	2	10	1	13
Amount of fines .....				
Plumbing permits issued .....	36	54	34	124
Plumbing projects completed .....	29	56	22	107
Premises connected to the sanitary sewer to January 31, 1927 ..	2,500	4,274	664	7,438
Connected during the month .....		5	8	13
Total .....	2,500	4,279	672	7,451

NOTE.—Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

MARCH, 1927

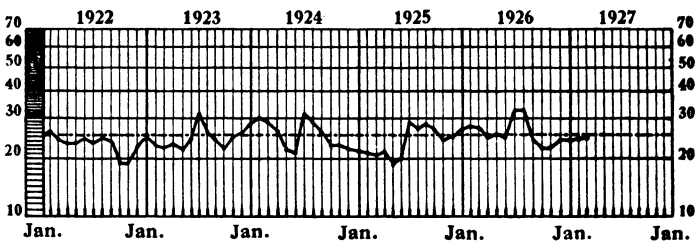
No. 8

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand to mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1927

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Sanitary Engineering and the New Public Health, by Professor WHIPPLE .....	101
Engineering Help and Your Coöperation, by M. MAÑOSA.....	102
The Need of Sketching Your Projects.....	107
Housing .....	111
Disposición o Empleo de las Basuras, por JOAQUÍN LÓPEZ.....	119
Sewage Disposal of the City of Manila, by S. ARTIAGA and M. MAÑOSA	125
Pozos Sépticos, por M. MAÑOSA.....	129
Miscellaneous .....	145
General Statistics .....	153



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VII**

**MARCH, 1927**

**No. 3**

**SANITARY ENGINEERING AND THE NEW  
PUBLIC HEALTH**

By Professor WHIPPLE

Looking back a century or more, we see the beginnings of industrialism, the rise of the factory, and the growth of cities as a result of science and engineering; we see the early evils of industrialism leading to a humanitarian movement; we see the great sanitary awakening at the beginning of the Victorian era. Then came Pasteur, the science of bacteriology, and the new public health. Now with advanced ideas of industrial humanics, housing and city planning, we are entering upon a new era of sanitation and once more the engineer must lead. Industrial revolution and a rude economic awakening are already upon us. The age of power is becoming the age of super-power; city planning has already become regional planning; decentralization of population is coming. The new problem is not so much how to educate a few sanitary engineers, as to how to educate all engineers to work in the interest of health and life.

The sanitary engineer especially comes close to life. A knowledge of biology is fundamental to his success. His work is a contribution to the great elements of life. He has opportunities to protect the beauty of trees, streams, lakes, and ocean shores; to build beautiful structures, to utilize the latent beauty of falling water. Although burying much of his work underground, he makes possible the development of noble city plans. Through organized cleanliness he makes it possible for the beauties of architecture to be revealed. The new architectural-roof motive, already evident in New York, resulting from the restriction of building heights, is an outgrowth of a sanitary demand for adequate light and air. Through insistence on individual responsibilities in public sanitation there is being developed a moral sense of duty and a spirit of coöperation, which is the very soul of civilization.

## ENGINEERING HELP AND YOUR COÖPERATION

By M. MAÑOSA

**DOCTORS:** The object of this short talk is to show you how to remedy some of our problems of sanitation from a point of view distinct from that which heretofore you have had in your respective districts. It is about the "Engineering Help" that you can put on to work out your problems of public health.

Naturally in dealing with the subject, I desire also to set forth my own opinion as to why this activity at present undertaken by the Division of Sanitary Engineering of our Service, will be successful only through your earnest and whole-hearted individual coöperation. And it is because we sincerely believe that the practice of public health engineering in the Philippines has not yet reached that stage of development or modern refinement which is considered absolutely necessary in some well-advanced localities. But, it will not be long from now, and we are very optimistic about it, that we shall see its pressing need in our community life where we could measure its result. It will all depend of course in the kind and amount of help you give us in the future. The field is so broad that we see no sure way at present to extend our influence, except through your good services and the sincere effort of your subordinate.

In the first place, let me give you an idea of the variety and diversity of the engineering works that in our belief could very well assist you and ameliorate your daily task. And to do it, I shall avail of the well-known means through which the principal routes of the infectious diseases so familiar to you pass.

I have ventured to represent them in tabulated form. I must call, however, your attention at the outset, that no attempt was made to follow any rule or certain order whatsoever in the arrangement. This arrangement consists only in embodying as many undertakings in the engineering practice as have more or less a direct effect in the protection of public health. We

---

<sup>1</sup> Read in the Annual Convention of Health Officers in the City of Baguio in May, 1926.

should also mention that there are other activities perhaps no less important than many of those tabulated therein, which by their nature falls beyond the limitations thought of and that, if considered, they could very well be grouped under "Miscellaneous Engineering Help" such as for example: the drafting of laws and ordinances; the drawing of plans, maps, diagrams, etc.; the preparation of estimates; etc. Even with all of such undertaking included, we think that the tabulation would not be considered complete.

#### ENGINEERING DEFENSE AGAINST KNOWN PRINCIPAL ROUTES OF INFECTIOUS DISEASES

1. Water supply	{	Sources and their protection.	
		Quantity and quality.	
		Purification.	
		Distribution.	
		Disinfection.	
2. Food.....	{	Pasteurization of milk.	
		Factory sanitation.....	Drinking water supply.
			Toilet accommodations.
			Noises, odors, smoke, gases, fumes, dusts.
			Factory wastes.
			Light and illumination.
		Ventilation.	
		Industrial accidents and safety.	
		Sewage disposal.....	Sewage treatment.
			Stream pollution.
			Soil pollution.
		Permanent improvements...	Markets.
			Slaughterhouse.
			Stables.
		Sanitary inspections.	Warehouses.
Mosquito control.....	Drainage.		
	Screening.		
	Larvacides.		
Rat extermination.....	Rat-proof construction.		
	Poisons.		
	Traps, gassing, etc.		
3. Insects.	{	Fumigation.	
		Flies, and its relations to.	
		Disposal of wastes.....	Street sweepings.
			Manure.
Garbage.			
Rubbish.			
Dead animals.			

# ENGINEERING DEFENSE AGAINST KNOWN PRINCIPAL ROUTES OF INFECTIOUS DISEASES—Continued

4. Contest.	{	Housing .....	Overcrowding.	
			Plumbing.	
	{	Town or city planning.....	Drainage.	
			Light and ventilation.	
	{		Street planning.	
			Zoning.	
	{		Parks and playgrounds.	
			Smokes nuisance.	
	{		Establishment of camps.	
	Atmospheric pollution.			
	Inspection of buildings.			
	Problems of transportation.			

Clear and great as the engineering collaboration in the problem of sanitation is, especially in the Philippines, it seems queer and disconcerting our indifference and inactivity to use such a powerful help against the incursion of infectious diseases in our gradually increasing populated communities.

Nevertheless, on our part, we shall claim that the time has not yet come for us to take rush steps. We are sorry to say that we have not yet reached that stage of modern life where comfort and convenience are synonymous to safety and happiness. With our eagerness for education together with our economic advancement there is no doubt that it will come soon as I have said. The best way to accelerate it, in our opinion, is through the sanitary education of our masses. And because of your number and distribution no body can better undertake the task than yourselves.

And there is another purpose for my appearance before you today, that is, not only "to seek your disinterested and sincere collective and individual coöperation," in the advancement of the standard of life of our people which will benefit us all and simplify our common problems, but also to ask you to be less severe in your criticism and judgment against existing improvements of engineering in character. We earnestly believe that we have a right to ask you this as coworkers, and also because of the nature of your training.

A close analysis of the table will tell you immediately that no matter what kind of work or improvement you select or need, by you, it means the investment, and a good one too in the majority of cases, of the money of Juan de la Cruz. And there is nothing more demoralizing to well-abiding citizens than to tell them that the cause of this or that sickness or epidemic is

the pollution of this or that, ordinarily, an engineering work constructed and maintained by over magnificent Bureau of Public Works or other engineering offices.

Doctors, I beseech you not to make such kind of statements unless you are well documented with laboratory analyses. It will reflect sooner or later also on you and in the work of your coworkers Engineers. In formulating your conclusions in any case of this sort, it would be better for every one of you to send the matter to your Division of Sanitary Engineering, not for revision, but only for a guaranteed courteous comment. We are human beings and every one of us more or less entertains some elaborate theoretical opinions. Before giving them, however, to the public, let us get together or communicate to each other, and discuss the merits or demerits of our own principles.

We must think that if we could only eliminate all the personal factors of infections to individuals through the sanitary education of our masses, we would have a clearer vision of the community infection by a communicable disease and, therefore, to search for the real sources of our epidemics would be easier. Then not only we could point out its exact origin, but also we could take the exact defensive measures. Let us consider this seriously and stop the common "passing the buck" proposition. We ask you to give us a chance to develop normally thru our own efforts and our own materialistic and numerical ways of doing things.

What we desire to mean, in other words, is that we would be in a better position to account for the money expended, for example, in a system of sewers, not only if we succeed in changing the people's habit of using "bonote" or other rigid materials after each seating and without mentioning other limitations of absolute necessity for the success of a sanitary drainage system, but also when we are cautioned to state or assure that certain epidemic has originated from fishing on certain waters or in handling food from a certain source, having in mind that we must also consider other possibilities, such as, for example, the ordinary practice of the majority of our "halves," which must be stopped and done away with, of not washing their hands after their physiological daily operations.

Again, it would not be a practical business proposition to invest our much needed and scarce money in the disbursement of a treatment plant for a water supply from a safe origin if we cannot convince the people to eliminate the common glass and the difficult-to-clean containers. We could give no more

hardship to the consumers, and we would not take a more demoralizing measure than to close or condemn a water supply on the ground that the same is suspected of being the cause of the prevailing intestinal disease without considering the qualities of its substitute.

Again, it would be a futile effort to enforce certain building regulations governing, for example, the sizes and heights of rooms or its construction type if later on after it has been built, the people will overcrowd in it or incorporate additions after additions that will obstruct its light and ventilation, and to make it worst, to permit the taking care of domestic animals within the same premises. You could do no greater injustice than to attribute to the officials of the cleaning department, for example, the unclean aspect of our streets, alleys, and yards caused thru the defective habits of cleanliness of the residents. We sincerely believe that you could do no greater harm to the Engineering profession than by acting in such a manner freely. The same should be applied to any Bureau or Government office that may have designed or constructed the work which may be questioned. Further, let me tell you, and you very well know, that in the Division of Sanitary Engineering in 1922, there were only two Engineers, but now, we are glad to say, and thanks to the personal effort of our present Director, Doctor Fajardo, we are five. We are not so optimistic about our numerical increase as we are about the great prospect that awaits the profession in the future. It will depend, to a greater measure if not in its totality, upon your personal coöperation and that of your subordinates.

## I. THE NEED OF SKETCHING YOUR PROJECTS

I shall try to bring forward such elementary information which I think necessary to correct certain deficiencies which in the past have been noted in the ordinary communications received from the field forces or observed them in some of our inspection trips in the provinces.

One of the most common deficiencies that have been noted in the field forces is the natural aversion to use or prepare maps, plans, and sketches. Many a time drawings for certain local improvements are prepared or desired. As a proper course, the subject necessarily has to be referred to the health officer of the place affected for comment, recommendation, or action. When the correspondence is returned often one can note immediately that the inclosed drawings have not been considered or inspected and much less studied. Although lack of training may make the health officers feel not properly qualified to judge upon the merit or demerits of engineering drawings, yet, as originators of the project or the improvement, presented by means of a drawing or plan as it is almost always the case, they should be interested to see that their idea has been placed as drawn in or embodied in the submitted plan and to be sure that the requirements of the Health Service or its Director are duly met with. In the same way that one would go to his library to obtain certain necessary references, a health officer should also, if necessary, approach someone who by training or experience is qualified to advise him about the plan, if he does not understand it. Indeed, it is but logical and natural to see on such occasions the district engineer of the province or any of his representatives. Otherwise he must try to learn and make efforts to train himself how to read plans.

But this is not the main point I should like you to note, because after all the above inconvenience can be minimized at the Central Office by passing the correspondence thru selected channels. What I should like to emphasize is the lack of effort on the part of the field officers to take the advantage offered by "sketches" in conveying graphically certain conditions in the field. To present the idea by means of sketches or drawings is much more needed by those who do not have a good command of the English

language; and even taking for granted that one has a good command of the language, it must be born in mind that the information contained in fairly prepared sketches is very hard, if not impossible, to convey thru written words. At least we are certain that it takes more time to do it and is not as exact as that which is desired for information with the details of the sketch. In reporting certain field conditions, it should be kept in mind that not all those working in Manila have visited all the places of the Islands, and even if they have done so, they are not always familiar with the particular condition treated. Hence the importance of preparing "sketches" for each particular case. It is also of absolute necessity that sketches should be drawn right in the field at the time of the inspection. This rule should be applied or followed in reporting conditions surrounding the existence of certain nuisance as well as in asking for certain repairs or improvement, or in planning public dispensaries or in making sanitary surveys, or in advising structural improvements to the public, etc. Any graphical representation made with a few lines on a piece of paper can give a better idea than hundreds of words contained in a long and well elaborated indorsements or in long talks. Not only that, the sketch, if well prepared, also saves work to everybody who has something to do with the matter for it is not only easier to read but also shows at once the findings or the subject matter treated by the author.

By sketch is meant an outline on paper or an approximate view by lines of the topographic feature of a certain place or locality showing the most important sanitary condition of the area desired to be described; or a drawing which will approximately give an idea of certain sanitary improvements or structure endeavoring to show its functioning and condition. In my opinion all important reports or memoranda on sanitary engineering matters should be supplemented by a sketch showing the locations or forms of the existing conditions. To be of value they should be made invariably in the field even on scratch paper to be perfected in the Office. Health officers, public health nurses, and sanitary inspectors should be able to make simple sketches. For this purpose certain principles need to be taken into consideration and some of them are given here, but the mechanical execution thereof can not well be learned thru theories and it has to be acquired thru constant practice. A little skill and some



imagination are just the things needed. The following procedure is recommended:

1. Before leaving the office be sure to have a pencil and a piece of paper with you. Then, take a glance of the town plan or the cadastral plan of the locality and try to locate the place to be visited. Determine the shortest route to the site and note the direction of the street in comparison with the north of the map or plan. Copy it if you have time, it will help you to orient yourself when in the field.

2. Upon arrival at the site to be inspected, make inquiries and find out the scope of the problem. Go around and determine the area affected. Pay particular attention to those features that in your opinion have a direct bearing with the problem under consideration.

3. When you have acquired a general idea of the ground in connection with the purpose of your inspection, select a point where you can visualize the area involved in the problem. Take your pencil and draw on your paper the limiting lines which should be parallel and proportional to the borders of the ground. Attention must be directed to the fact that sketches can be inaccurate in proportion but still if they contain clearly all the sanitary features and show their relative positions they are and should be of considerable value.

4. Find your position in your sketched area and then start to draw or mark down all the data that in your opinion has a sanitary value for your particular problem. See if there are streams, ditches, swamps, ponds, dumping places, outhouses, etc. Mark the place or draw the buildings and all permanent objects standing in or near the areas such as kilometer posts, bridges, fences, roads, trees, etc.

5. There is no need of using conventional signs for sanitary sketches. Use freely the names of things, either in English or in the local dialect, and write them fully if possible, if not, at least in abbreviation.

6. Comparing with your personal height, determine by estimate, the differences in elevation of the surface of the ground and put down your figures; or if you can, draw the contours of the ground line uniting points of same elevation.

7. Lay in the sketch and in the right direction all estimated or measured distances. The estimations could be made in several ways. The most common and perhaps accurate enough for

the purpose is by passing it over noting as you do the number of your steps the length of which no doubt you know.

8. Bear in mind that all the above information, to be of some assistance, must be drawn clearly. The Central Office is well aware of the difficulties met in working in the field and also has an idea of the qualifications of subordinates, so as to accomplish this end, we think there is no need of a drawing set, a scale and a drawing table. Principally what is desired is that the work be done in the field. If it is necessary, redraw your field sketch or scratch upon arrival at your office, making at the same time the necessary copies.

9. All lettering should be written so as to be read from the bottom.

10. Put the title, date of inspection and indicate the North direction by an arrow.

These rules will certainly be useful guides to the Health Officers. However, as it has been stated already, skill to make sketches is acquired only thru constant practice. The selection of sanitary controlling points as well as their presentation or display upon a piece of paper, certainly requires the best ability of a sanitarian and consequently it is worth the attention of all field officers.

With the above statements, we do not want to mean that all reports on field investigations should invariably be accompanied with a sketch of the grounds. We have in mind that such shall be made in connection with the important ones especially those that may reach, for some reason or another, the Central Office. In these cases, we think that the written information contained in your letters and indorsements should be accompanied with a graphical representation of the area in question by means of a sketch prepared right in the moment of inspection. We earnestly believe that in doing so you will not only present the problem clearer but also you will probably simplify all works that shall come later, and in the course of time you will train yourselves in reading engineering plans which play undoubtedly an important part almost in all the phases of the work of health officers.

## II. HOUSING

Taking into consideration the events which already occurred during the part of this year that has passed, it is possible that no other term will be more used for some time in the future than the word "housing," and this may especially be true in all sanitary circles.

The housing problem is inded one of the most serious that confronts the City of Manila now-a-days. But this is not unusual for there is no city of any importance that has not experienced or will not experience such a problem because, sooner or later, it will. The fact is that it can be stated in general terms that no city is free from such a problem, and unfortunately we have to say that, yet no one has succeeded to find a practical and lasting solution to it.

It is a problem that, as everybody knows, presents many aspects, and its effects upon the community are shown in statistics in many diverse ways and forms. In cold countries, for examples, the "sanitary side" of the problem is considered the most important, because the problem of light and ventilation aggravates all other sanitary evils, such as overcrowding, dirtiness, bad odors, etc. In tropical countries, however, like ours, we believe that, considering the idiosyncrasy of the Filipino people, the "economic side" of the problem on the part of the tenants and in some instances also on the part of the house owners is the determining factor which needs to be taken into consideration for a satisfactory solution, because, we think, it is intimately associated with poverty. Perhaps second in importance to the "economic side" is the "moral and social aspect" involved in the question; the lack of privacy as well as the human intermingling between children and adults tends to destroy decency and leads to the corruption of youngsters.

As many have stated, the areas wherein this problem exists, are the natural shelters of criminals and they therefore promote the formation and training of vagabonds and in civil and impolite people. In addition to the factors already enumerated, there is still the "aesthetic side" of the problem which tends to depreciate the district where these barrios or slums are located, and even the

good name of the district or the city proper especially if the bad conditions are tolerated and the "political side" if the corresponding authorities show indifference to the abatement of such bad conditions because of the fear of lossing the symphathy and the votes of the poor class.

The health officers in the provinces are not directly concerned at least for the present, with this problem of the City of Manila. There is, however, a certain phase of housing which they should be well familiar with in order to fulfill properly, in our opinion, their mission as health guardians and advisers in their respective districts. This phase is "the sanitary requirement necessary for all dwelling constructions" either for the purpose of drawing local sanitary regulations about them or giving sanitary advice or suggestion relative thereto to the people who seek for it.

In this respect, we may state that there is nothing more known to any citizen than the elements constituting the home and home life, and there is hardly an element that takes part in a properly constructed dwelling which has not a direct bearing either on the individuals or their personal hygiene or on the orderly habits of all the occupants. Therefore, any proper advice of the kind given in due time will be well appreciated by those who receive it as it will be understood by all its usefulness and undoubtedly, it shall give plain evidence of the honesty of the mission of health officers and of the interest they take in the community, and in some way to prove their skill and knowledge in public sanitation. In other words, it offers to health officers an opportunity to attract followers. It should be kept in mind that the construction of a home represents the investment of a good part of someone's earnings or income and that the natural pleasure of owning a home may be completely dissipated through a shortsighted plan or poor construction. We are well aware that you do not have any engineering preparation, still we just want to see all our health officers in our many sanitary districts in prominent positions, where as a general rule professional officials are not common, and therefore, to deserve in this particular line the worthy name of consultant or advisers.

As a rule, the first thing that comes to the mind of a prospective builder is the question of how much a certain building that he would desire to construct is going to cost him. We do not expect any doctor to give such a builder any definite answer, because even the engineers with all their training, experience and equipment are very dubious and skeptical to give

out the figures, and this is more true if they are not given enough time to prepare the plans and the details of construction. However, it can be stated that the cost of a house is directly related or proportional to the permanency of the materials selected for its construction. It is cheap when the cheapest local material is used. It is better and safer to leave the owner alone in inquiring or estimating the cost of either the house or the site.

But certainly the health officer in a province must know what is understood and meant by a sanitary house or a sanitary site for his particular locality. He should know how to choose between two existing buildings or building sites which one is more sanitary or which one shall give better chances to the occupants for healthier living. Besides he should be able to tell or determine for certain given conditions the limits of accommodations.

If a prospective owner would ask an engineer what he would consider a good site for a home, I am sure the engineer would tell him to search for a land: with sloping ground and with a porous soil, one in which underground water, judging by the height of water level of the neighboring surface well is not found near the surface of the ground; a lot where the public water supply could be extended to; abutting to, if possible, or at least near a convenient public street and which is not dusty; where public drains, municipal lighting system and other improvements of public utility are available; where it is far or beyond the reach of smoky industries; a place not noisy; where a sufficient space would be obtained for tree planting or gardening; with a pleasant neighborhood and if not so, at least entirely isolated from undesirable surroundings; and, finally, a place not very far from the school, the market, and the church.

Should the same man ask what type of construction he should build, the engineer would tell him that: A house sufficiently large for his family, that is, one that complies with the common saying that "a family for each house and a room for each person" either in a bungalow or in a two-story house, of durable materials, selected in the order of easiness to clean; not to transmit much heat; non-absorbent of water or moisture; non-inflammable (wooden construction with galvanized iron roofing is very advantageous for our climatic conditions because of its abundance, easy construction, repair and alterations); provided with a modern plumbing system and if possible connected to a public sanitary sewer system, or to a public drain thru an

independent septic tank; it should have at least a bath room in the same floor as the bed room; a water closet for each floor; modern and up-to-date kitchen; a sleeping room for each adult member of the family located, if possible, on the east side of the building to receive the morning sun; a large porch extending to the west side of the building for the protection against afternoon heat; it should be well rat-proof; oil painted for its preservation and appearance; and finally, if available, it should be provided with gas connection and illuminated with electricity.

But the selection of a site generally cannot be made at will in many localities and the points already enumerated may not help any to solve the daily problems which as a rule come in all urban places. It may happen that the construction of a house has to be adapted to the financial means of the owners. Besides that the conditions of our provincial towns are not well developed and can hardly count with public utility improvements. In these cases the following conditions should be considered:

1. If the dwelling is going to be erected in a small barrio where the form of land is variable and its cost is practically insignificant, there is no doubt that the desirable conditions for site as pointed out could be found or at least would approximately conform with almost an ideal condition as stated. This is not by any means the case in well populated towns or districts where a certain planning is already existing and the topography is plain. When this happens a careful judgment is necessary to determine the best and most suitable and economical substitutes of the above mentioned requirements. An effort should be made then to artificially bring actual conditions to as near as possible to the stated standard or else improve it in the following prescribed form. In this case the cost of the land will be somewhat increased.

2. *Site*.—Flat grounds like those lying in valleys are ordinarily water logged, that is, the ground water level is said to be high, consequently the soil is usually wet or damp. In this case the site must be filled in at least to the level of the public road. Marshy land should be avoided and in case this is not possible, it should be corrected as has been indicated. Sandy or gravelly soil and as a rule all porous soil are best adapted for building sites and for filling materials as well, especially if it has a few inches of ordinary dirt on top for gardening. Despite

this statement, however, clay should not be rejected as it also affords a good building site especially if dry or has a natural slope for drainage. Steep slopes offer the inconvenience of difficulty for both construction and access, consequently to build on such places is more expensive than on flat or gently sloping ground. Tops of hills are good sites because of the better circulation of air, but the construction has to be made stronger; as a rule they are not as economical sites as those of the level grounds. About the size and form of the lot a great deal could be said. The rule, "the larger the better," is a safe guide for sanitarians.

3. *Orientation*.—No mention has been made hereinbefore of the orientation of the building. Orientation of buildings in cold countries is absolutely necessary for the protection against certain winds or in order to receive the benefit of sunlight. For our tropical condition the internal distribution or the arrangement of rooms could substitute the requirements of proper orientation needed in Occidental countries. However, if desired, the protection against typhoons and the obtainment of the morning sun rays, or an special land feature which may offer an exceptional view, could be taken into consideration for the selection of a proper position.

4. *Type of building*.—The bungalow type of construction is classified as a labor saving building, because the whole floor is on a same level and can save the effort spent in climbing stairs of the two-story type. For this reason, they are well adapted for dwellings of old people and children. They have the inconvenience of requiring larger area of construction and also of roof and if not well shaded with trees are warmer than any two-story building. They have the especial advantages of requiring less stronger structural members, more simple plumbing installation and no space is loss by the staircases of high buildings. Two-story buildings could be built with less superficial area of ground. In planning a house one must be sure of the family needs and requirements and the sketch prepared accordingly. Of course, if an engineer or an architect is available the health officers should not hesitate to refer the prospective builder or buyer to him as it will pay to engage his services not only to get his expert opinion but also his advise in the design and in the supervision of the construction. The health officer must be thoroughly familiar with the necessary requisites for the obtainment of building permits in his particular district.

5. *Light and ventilation.*—In cold countries this is one of the hardest sanitary requirements to comply with, but for our particular conditions we could take care automatically of the requirements of light and ventilation by providing each room with a window opening connected directly with the external air. We think that a window area between  $\frac{1}{10}$  to  $\frac{1}{8}$  of the floor area is more than sufficient for any type of building. The yard space or open court for any provincial constructions should at least be 50 per cent of the lot area.

6. *Arrangement and sizes of rooms.*—The internal arrangement of partitions, the distribution and sizes of rooms should be designed to conform with the especial needs and habits of the owners. Many prefer square or nearly square rooms, while others see an advantage in rectangular or oblong rooms. The salas or living room must be the largest room of the house as it is the most used and it must therefore be well lighted. Bed rooms should never be used as passages to other part of the buildings as they are at present in the majority of our houses. They should be large in size as well as have wide windows for natural light and ventilation. The doors should offer the least possible obstruction to save space; they should be located in such a way so as to avoid direct draughts of air. Many prefer the doors to open from the outside of the rooms while others preferred them in the opposite arrangement. Ordinarily, the top part of the partitions is made with open work or built with perforated planks to let free passage of air. The American practice of providing the bed rooms with closets for clothes deserves to be imitated as they eliminate the ordinary obstructions from projecting furnitures and give a cleaner and more orderly aspect inside of the rooms.

7. *Height of floors.*—The central office has adapted the distance of 3 meters between ceiling and floor as a minimum height between floors. This is very good standard for both the architectural needs as well as for the natural light requirements. However, this should not be taken to mean, as many health officers do so blindly, that a floor of 2.50 meters in height is insanitary and should not be used for living purposes because it shall be prejudicial to the health of the occupants. If the cubical content of a room is taken as basis as prescribed in many ordinances, a room of 5 meters in height is more dangerous and prejudicial to health than one of 2.50 meters only as this last one will necessarily give more superficial area per occupant than the former, accordingly the lower the floor the



less crowded it should be. In places where the building construction is not regulated the 3 meters in height may be recommended. It should not be enforced on sanitary grounds because it may lead to unnecessary wrong judgments.

8. *Plumbing*.—In plumbing installations especial care must be given to the sizes of the pipes, their slope, and the way joints of the different pieces or fittings are made. There should be provided with cleanout for the cleaning of obstruction. All fixtures should be properly trapped and ventilated. A standard sheet showing a plumbing installation which can be furnished by the Central Office, will be of help to the Health Officers. Leaking plumbing should be repaired immediately. The selection of fixture is another important point in all plumbing installation and rests entirely on the available means and desires of the owners. The best class, not the cheap, should receive the first choice.

9. *Surface drainage*.—One of the sanitary requirements, the hardest to provide for building construction in the provinces is that one pertaining to adequate drainage for all the liquid wastes. In choosing a site preference should be given to places where public drains or sanitary sewers are available. In case there is none a septic tank should be constructed and the effluent disposed off by artificial underdrains or by leaching cesspools or by any other means recommended by the Central Office.

10. *Bath and toilet facilities*.—The location and size of bath and toilets rooms are a matter of convenience. They should invariably be located in the same floor where the bed rooms are. Their type and construction should be subordinated to the drainage facilities obtainable in the place where the building will be erected. Large bathrooms or white tiled bathrooms are less necessary than the one which has a good plumbing installation and with a safe sewage disposal. The cost of its construction, therefore, should be consistent with the amount invested in the plumbing installation and the disposal of wastes. The same thing could be said of the details of the construction of the kitchen. Labor-saving devices for the modern kitchens are so numerous to be enumerated in this paper. Inasmuch as servants can yet easily be found everywhere the time we think has not come yet to consider this modern requirements of house construction.

11. *Foundation and ground floor*.—The principal sanitary requirement of the foundation of buildings and the ground floors of residential buildings is that they should be made rat-proof. Six

inches of concrete projecting over the surface of the ground will be enough to secure this end, especially if the house is surrounded with a stone "zócalo" or water "table." It is safer, and more sanitary, however, to recommend to elevate the first floor of the building one meter above the ground surface. In this case the wooden post should rest on concrete piers raised .30 meter from ground. Wooden floors and partitions should be constructed without any hollow space or else they should be made rat-proof by either using heavy galvanized wire nets or by covering the hollow space with galvanized iron sheets in the form recommended by the Central Office.

12. *Miscellaneous requirements.*—Other miscellaneous sanitary requirements such as the source of water, in case public supply is not available, manners of distribution, etc., will be considered later under, "water supply." Other domestic requirements, such as the painting, screening, lighting, gardening, the construction of roof, electric and gas installations, etc., belong to another group of considerations which, we think, do not very well fall within the limits of the general broad field we intended to cover. As they supplement, no doubt, the necessary comfort of the modern life, facilitate the operations for a thorough cleanliness, orderliness, besides the natural privacy that they afford, they should deserve the attention of a prospective house-owner.

## DISPOSICIÓN O EMPLEO DE LAS BASURAS

POR JOAQUÍN LÓPEZ

*Ingeniero Sanitario Auxiliar  
Servicio de Sanidad de Filipinas, Manila*

El problema de la disposición, aprovechamiento ó destrucción de las basuras no solamente interesa al ingeniero sino también al médico o a cualquier persona cuya misión sea velar por la salud pública. Fácil es hacerse cargo de la magnitud y vital importancia del problema con sólo considerar el volumen exorbitante de basura que se produce en las grandes urbes, centros industriales y comerciales, basura que si no se recoge rápidamente y dispone adecuadamente puede crear condiciones insalubres y hasta llegar a ser un verdadero peligro para la población, motivo por el cual, los municipios que en algo se preocupan de la vida y bienestar de sus habitantes dedican especial cuidado, al modo de deshacerse rápidamente de las basuras, bien sea destruyéndolas, o aplicándolas a la agricultura o a la industria o de otro modo conveniente.

Demostrada la trascendencia del asunto, es nuestro propósito presentar a continuación una breve y concisa descripción de los métodos "naturales" para el destino que ha de darse a las basuras, con objeto de refrescar ideas e interesar más a los oficiales de Sanidad y al público en general en el problema que nos ocupa íntimamente relacionado con la salud pública.

### ARROJÁNDOLAS AL MAR

El procedimiento que es sumamente sencillo es aplicable solamente en las ciudades marítimas y consiste en transplantar la basura por medio de gabarras u otras embarcaciones adecuadas a una distancia considerable de la playa en donde son arrojadas.

También pueden ser arrojadas a los ríos cuando las riberas de los mismos no estén habitadas aguas abajo. El recurso es de dudosa eficacia higiénica, pues aun tirando las basuras en alta mar los vientos y las corrientes marítimas pueden arrastrarlas a la costa u otros lugares poblados, en donde es probable que se establezcan focos de infección.

## PARA TERRAPLÉN

El procedimiento como en el caso anterior es bien sencillo y consiste en depositar las basuras en terrenos vacíos tomando desde luego ciertas precauciones como veremos más adelante.

Este es el método usado por la Ciudad de Manila para la disposición de sus desperdicios. El año 1926, por medio de este proceso, la Ciudad de Manila ha recogido y usado para el terraplenamiento de sitios bajos 77,000 toneladas de basura, habiendo conseguido terraplenar una extensión superficial de 6,432 metros cuadrados de terrenos de propiedad privada y 35,642 metros cuadrados pertenecientes al municipio.

La disposición de basuras de la Ciudad de Manila cae bajo el *control* directo del ingeniero de la ciudad, bajo la supervisión del Servicio de Sanidad de Filipinas y se efectúa de la manera siguiente: La basura es recogida sin clasificar por carros y por vehículos de motor y conducida a los sitios en donde se han de verter o depositar. Una vez allí, la basura compuesta de toda clase de desperdicios se deposita y se desinfecta aunque parcialmente con una solución de sellerol del 2 al 8 por ciento u otro desinfectante adecuado, el cual se vierte por medio de una bomba de mano previamente instalada. Acto seguido se nivela y por medio de una pala se espolvorea la superficie previamente desinfectada, con cal para después recubrirla con una capa de tierra limpia de 10 centímetros de espesor mínimo. Cubierta la basura se desinfecta la superficie periódicamente durante 6 u 8 días hasta exterminar las larvas que pudieran desarrollarse.

Hemos dicho con toda intención en el párrafo anterior que la desinfección se verifica parcialmente, puesto que si bien es verdad que una desinfección completa sería de desear, ello haría que el procedimiento fuera económicamente prohibitivo.

Los resultados obtenidos en los terraplenes de basuras de la Ciudad de Manila, tal como se han descrito anteriormente, no son nada alagadores. Los olores que emanan debido a la descomposición de las materias orgánicas juntamente con el olor penetrante del desinfectante usado son altamente molestos, nauseabundos y motivo frecuente y principal de quejas del vecindario. Son criaderos de moscas, y a pesar de las medidas sanitarias adoptadas, suelen atraer perros, ratas y otros animales, y el aspecto que ofrecen dichos terraplenes no es nada atractivo. Por estos motivos este Servicio no ha cesado de recomendar a las autoridades municipales veces y más veces la adopción de

otros procedimientos más sanitarios y modernos como por ejemplo el proceso Beccari, incineración, etc. Deseamos, no obstante, hacer constar que la ciudad no escatima esfuerzo alguno, y dentro de sus exhaustos recursos hace todo lo humanamente posible para suprimir o, por lo menos, minimizar los defectos señalados.

La Ciudad de Chicago en 1913, como medida de emergencia ha conseguido terraplenar con basura sin que se presentaran las molestias que originan nuestros terraplenes de la manera siguiente: La basura es sumergida por espacio de doce horas en tanques llenos de agua con medio por ciento de ácido clorhídrico y medio por ciento de ácido sulfúrico para retardar la fermentación. Después la basura ya saturada se desparramaba en los sitios bajos por capas de un pie de espesor y se cubrían con ceniza cuyo espesor oscilaba de 18 a 24 pulgadas, y así sucesivamente hasta llegar a una altura de 25 pies.

¿Puede la Ciudad de Manila adoptar el sistema usado en Chicago en vista del éxito alcanzado? Aunque no somos los llamados a contestar dicha pregunta, deseamos hacer constar que está fuera de toda duda que el sistema empleado en aquella ciudad es mucho más higiénico que el que empleamos en Manila, sin embargo nos inclinamos a creer que el erario municipal no podría soportar los gastos adicionales en que necesariamente tendrían que incurrir. Es más, el cambio en el sistema de tratamiento implicaría otro cambio no solamente en la recogida en las casas sino también en la recolecta por el municipio, pues la basura tendría que ser clasificada antes de ser tratada.

Resumiendo, y antes de pasar a otro sistema de tratamiento enumeraremos a continuación los preceptos o requerimientos principales para la mejor conservación de todo terraplén de basuras:

1. Se deberá procurar que los lados expuestos del terraplén sean lo menos extensos posible, por ser dichos lados los más peligrosos en vista de que, por lo general, no se cubren hasta completar totalmente el terraplén.
2. No se debe permitir en el terraplén a otros basureros más que a los empleados de la ciudad.
3. Se debe tener suficiente material limpio como tierra, ceniza, escombros, etc., para cubrir y nivelar la superficie del terraplén.
4. No está demás disponer de pequeños crematorios portables para quemar cierta clase de basuras que no son muy apropiadas para terraplén.
5. Es conveniente que haya servicio de agua con mangueras para prevenir el polvo y para apagar incendios.

6. Debe haber suficiente cantidad de cresol, petróleo, cal u otros desinfectantes para destruir las larvas de moscas antes de que se desarrollen y empiecen a volar.

7. Si se nota la existencia de muchas moscas adultas se pueden instalar trampas para cogerlas.

8. Conviene cercar toda la superficie que se va a terraplenar con un cerco movable de carácter provisional para evitar el aspecto repugnante de la faena, facilitar el control y evitar que papeles y otras basuras ligeras sean arrastradas por el viento.

9. Conviene dejar una distancia o espacio razonable entre el perímetro del terraplén y las casas más próximas que pudieren ser afectadas.

10. Debe haber una persona en el terraplén a quien se hará directamente responsable de cualquier anomalía o defecto que se encontrara.

### COMO FERTILIZANTE

Este método usado en algunas ciudades europeas es aplicable para basuras caseras, barraduras de calles, y estiércoles. Consiste en desparramar la basura en capas delgadas sobre la superficie del terreno, pasando el arado uno o dos días después de tal suerte que parte de la basura quede cubierta y parte mezclada con la tierra.

El procedimiento es utilizable para comunidades pequeñas, pero para ciudades grandes es de dudosa aplicación. La basura se debe clasificar previamente tal como ya se ha indicado, y las partes de escaso valor fertilizante deberán disponerse de otro modo. Los terrenos arenosos son los más adecuados, necesiándose enormes extensiones, lo que contribuye a alargar considerablemente los acarreos.

### ENTERRÁNDOLAS SUPERFICIALMENTE

El enterramiento de las basuras cuando se efectúa convenientemente es eficaz y recomendable desde el punto de vista sanitario, en particular para las distintas provincias del Archipiélago que no pueden afrontar los gastos consiguientes de otros procedimientos más elaborados.

El procedimiento es bien sencillo y consiste en abrir zanjas de unos 3 pies de anchura por 10 o 12 pulgadas de profundidad en donde se entierra la basura en capas de 6 a 8 pulgadas de espesor y las 4 ó 6 pulgadas restantes se rellenan con la tierra obtenida de las zanjas. Dos pies de separación entre zanja y zanja son suficientes.

El tamaño de las zanjas que acabamos de indicar varía según las localidades, así vemos que en Columbus, Ohio, las zanjas abiertas tienen una anchura de 7 pies, una profundidad de 2, y son de longitud indefinida.

El éxito del sistema está en no enterrar la basura muy profunda con objeto de permitir la circulación del aire y fomentar la descomposición en virtud de las bacterias aeróbicas del subsuelo, las cuales como es sabido se encuentran en las capas superiores. El procedimiento se aplica a residuos de cocina y otros desperdicios que entran en un estado de putrefacción rápidamente, pues los escombros, papeles y sus similares se pueden disponer de otro modo más sencillo. Es conveniente que los campos de enterramiento estén algo alejados de las viviendas, también deben estar debidamente drenados para evitar posibles inundaciones y que el agua del subsuelo permanezca a 12 ó 18 pulgadas de la superficie, puesto que el proceso de descomposición microbiana se retrasa notablemente si la basura depositada está debajo de la capa de agua subterránea. En terrenos arenosos o porosos la completa descomposición se suele verificar después de dos años, y en terrenos compactos, como los arcillosos, se requieren 4 ó más años, dependiendo de la naturaleza del terreno, clima, vegetación, etc. Después de transcurrido este lapso de tiempo en que es de esperar que la basura se haya ya transformado en material estable, se puede utilizar otra vez el terreno con el mismo objeto.

#### COMO ALIMENTO DE ANIMALES

La disposición de basuras usándolas como alimento de animales es un método conocido desde la antigüedad y hasta nuestros días es usado en muchas ciudades. ¿Quién en Manila o en provincias no ha visto que ciertas clases de basuras son recogidas y suministradas a los cerdos para su alimento?

Este procedimiento es solamente aplicable para disponer desperdicios de cocina, hoteles, restaurantes, carinderías, etc., u otras basuras de valor alimenticio reconocido. Los papales, trapos, escombros, latas vacías, etc., deberán separarse y disponerse de otro modo. Los desperdicios deberán ser frescos y se suministrarán antes de que haya indicios de principios de fermentación. Los cerdos son los animales que con más frecuencia se alimentan con desperdicios. También se ha alimentado a las vacas, pero en muchas ciudades se ha prohibido porque la leche que producen las vacas así alimentadas es de inferior calidad y el ganado no se desarrolla bien. Las gallinas también se alimentan de las partes sólidas de ciertas basuras, pero la cantidad que pueden consumir las aves es insignificante.

Con esto damos por terminada la relación de los métodos "naturales" de disposición de basuras, los cuales los hemos cla-

sificado como métodos naturales por valerse de agentes naturales como el agua, el suelo, la luz solar, la vida microbiana tanto en el agua como en el suelo, la vida vegetal, la vida animal, etc.

Los otros métodos que caen bajo la denominación de "artificiales" cuales son: selección a mano de las partes aprovechables de las basuras, incineración o cremación, extracción y aprovechamiento de las grasas y abonos por los procedimientos Merz, Simonin, Holthous, Arnold, Chamberlain, Wiselagal, Edson y Cobwell, aprovechamiento para la agricultura, el moderno sistema Becari, serán objeto de otro trabajo.



## SEWAGE DISPOSAL OF THE CITY OF MANILA

By S. ARTIAGA, *City Engineer*

M. MAÑOSA, *Sanitary Engineer*.

### [Abstract]

The original paper, which describes with some details the layout of the present sewerage system of the City of Manila, was prepared for the Sixth Regional Conference of the "Colegio Medico Farmacéutico." It presents four (4) original plans showing the different aspects of the system and also the problem of sewage disposal of the city. It is likewise divided into four (4) parts, namely: "historical notes," "present sewerage system," "the method of disposal adopted," and "the so-called pollution of the Manila Bay."

In the "historical notes," it is pointed that the importance of the problem of sewage was long ago realized and was given due consideration, but because of the somewhat obscure knowledge in sanitary science during those days and especially of the limited city resources, no important undertaking was done. Mention is, however, made of a Royal decree, dated August 30, 1882, approving the classification of "esteros" of the City of Manila; a project of Major D. Carlos de las Heras of the Royal Corps of Engineers of a combined sewer system to discharge along the Pasig River; and a system of underground sewers built of rectangular blocks of adobe stones within the Walled City and a small part of the commercial section on the north side of Pasig River, which was found working by the Americans. It is also stated in this part that "in order to remedy the undesirable and prevailing conditions prior to 1902, the Americans implanted the "sanitary pail system," and unfortunately it is still used at present in some parts of Manila.

The description of the methods now prevailing is described at length in the part "present sewerage system" which was designed by Mr. Ingals and reviewed by consulting engineer, Mr. D. Fitzgerald. It is said to have been based upon a separate sewer system and laid in "zones" because of the practically level and low ground of the city. Thus, the city is divided into seven (7) distinct zones, each constituting an independent

system of collection for the area comprised, and all the sewage collected by the sewer system is converged by gravity into a deep well or a pumping station. Figures I and II represent graphically the general layout and the operation of the system.

Under "the method of disposal adopted," the following is quoted:

*The method of disposal adopted.*—The sewage which was elaborately collected and transported to the waters of Manila was not done so by the mere whim of the designer nor in obedience to the common desire to remove it from sight. No, it is being done because it is in accordance with a universal practice of all sea-bordering cities and also by a great number of inland communities with favorable conditions for discharge into streams. It is being done because, besides being in accordance with sound principles of modern sanitation, it is the most economical both in maintenance and operation, and further it is a scientific process of purification not less effective than the best artificial method of treating sewage.

And after discussing briefly the merits and demerits of the method of "disposal by dilution" this part ends as follows:

All we can state in this connection is that it is theoretically possible to purify or transform any sewage into clear, innocuous, harmless water before it is finally disposed by dilution, but it is hardly practicable because of its cost. On the other hand, the disposal of raw sewage by dilution, when it is properly undertaken, is an ideal method, because it takes advantage, in the first place, of a natural treatment and, consequently, it operates automatically. In the second place, the purification processes involved obey the scientific principles, such as when chemically considered, the oxidation of the nitrogenous matters of sewage which results in its reduction or mineralization; when physically considered the factors of dilution, sedimentation, temperature, sunlight, etc., and when biologically considered, the death of microorganism thru symbiosis, influence of time, change of environment and various other circumstances with which you are very familiar also take place. And finally, because it is the most rational, it being the most economical method of disposal and seldom requires any special burden to the users.

Finally the last part on "the so-called pollution of the Manila Bay" is quoted in full for the benefit of the officers:

*The so-called pollution of the Manila Bay.*—About two years ago, on account of the outbreak of a small cholera epidemic, some talk was launched relative to the pollution of the Manila Bay by the discharged sewage of the City of Manila. No attempt will be made to discuss the merits or demerits of this contention. All our efforts to confirm the investigations made which lead to such a conclusion have unfortunately failed to our regret. However, we would not desire to close this paper without touching even slightly this important adjunct of the sewage disposal of our City Capital.

We all know that our beautiful Manila Bay is surrounded by five important provinces—Bataan, Pampanga, Rizal, Manila, and Cavite. Each one of them has a number of waterways draining into the Bay, because of their sloping ground, also they have a number of populated small areas surrounding the magnificent shore line of the Bay with the exception perhaps of Manila which is all built up in its whole length and Pampanga which has its marshy shores practically uninhabited, as can be seen in Plan No. 3. In its interior part, however, it has very important populated areas such as shown in the plan.

Somewhere in this report mention was made that the sewage outlet of the City of Manila is located one mile and a quarter ( $1\frac{1}{4}$ ) away from the shore line at the end of Azcarraga Street. The designer has selected this point after a careful field investigation. For example among other things, he studied the direction and velocity of the current; the relation of the tides and winds to this current and the topography of the bay before deciding definitely the point he chose. In Plan No. 3 are shown a number of his float observations which have contributed to the selection. The tendency of the water currents was to move away the floats from the mouth of the Pasig River toward the mouth of the Bay, inclining a little bit toward the coasts of Pampanga and Bataan. To show otherwise, or to assert that this direction is wrong, we honestly think that in justice to the designer the same field investigations or others equivalent should be performed first in order to advocate any alteration of the present system or justify expenses for any necessary change.

It must be stated in addition that the present technique of determining the proper point for sewage outlet is more complete and thorough than at the time when Mr. Ingalls worked out the Manila problems, and this is but natural if the great strides of sanitary science in the last few years are considered.

Our contentions should not be interpreted as if we do not believe in the possibility of the pollution of the waters of the Manila Bay by the city sewage. No, we only desire to establish one point which, in our opinion, should be emphasized, that is, it is very important in any discussion of this nature to take into consideration the great difficulty of the determination of the real sources of pollution and the nature thereof.

In Plan No. 4 a part of Luzon Island is shown, giving the watershed of the Manila, Bay, or in other words, exposing the area where all the rain waters that fall thereon run and flow into the Bay. If we stop to consider that this area is about 17,000 square kilometers comprising 170 municipalities with an approximate population of over 1,500,000 or 5 times, that of Manila, and that this population is not provided with sanitary closets, we cannot by any means determine the amount they contribute to the contamination of Manila Bay. The City of Manila itself has only little over  $\frac{1}{3}$  of its area sewered. What is the effect of the unsewered area on the pollution of the ground? What part of this pollution goes into the esteros and then to the Pasig River, (a good amount of the flow of which passes over our sewer outlet)? In what quantity does our poor population living along the shores of the District of Tondo share in the so-called pollution? Does the floating population concentrated in our waterways contribute any?

In Plan No. 3 we tried to show the chief possible sources of pollution of Manila Bay; still, there is no doubt, they are not all. Despite this, we are confident that the unqualified general statement that the pollution of Manila Bay is an imminent danger to the public health, cannot be accepted. For this reason, unless more convincing proofs would be forthcoming, we can at present hardly justify the introduction of any considerable degree of new measures of prevention involving great expenses, the several heavily polluted spots which could be detected with the naked eye, near or at the mouths of the large rivers, that disembogue to it and about the outlet of the Manila sewer system notwithstanding. The pollution offered by the rivers although constant in character is relatively small; that caused by the sewage of Manila sewer system, although large and may become dangerous, occurs only for intermittent periods or for intervals of short duration. Such has its scientific explanation usually given in textbooks, and can be proven by just mere observations.

## POZOS SÉPTICOS

Por M. MAÑOSA

Si fuéramos a pasar una revista del progreso obtenido estos últimos años por nuestro pueblo en materias sanitarias veríamos que no hay nada tan sorprendente como el general deseo que ahora prevalece aún en nuestras poblaciones pequeñas de tener un sistema de abastecimiento de aguas. Este deseo se refleja tanto en el número de los sistemas ya en uso como en los proyectos ya estudiados. Cada año se apropian gruesas sumas que se emplean para este fin y si bien es verdad que a los oficiales de sanidad de cada localidad se debe acreditar para sí este adelanto, no es menos cierto que el pueblo es, más que nadie, merecedor de encomio y alabanza tanto por el sacrificio económico que se impone a sí mismo como por la manifestación palpable de un "standard" de vida más elevado.

Pero desgraciadamente no son muchos los funcionarios, que se den cuenta exacta de las condiciones insalubres que puede originar el tener un suministro abundante de aguas sin tener un medio adecuado de evacuarlas. Y por eso, señores, he aceptado con placer la invitación hecha por el Doctor Jara para presentarme hoy ante Udes. en esta asamblea provincial de oficiales de sanidad de Tayabas no solamente porque deseo aportar mi grano de arena en esta singular empresa del pueblo de Lucena al efecto de establecer un sistema de desagüe sino también aprovechando esta reunión de oficiales sanitarios de la localidad, para hacer patente mi simpatía a todos cuantos funcionarios han contribuido y contribuyen a la feliz realización de esta empresa sanitaria que desde ahora no dudo sentará precedente para las demás poblaciones del resto del Archipiélago.

Voy a decirles dos palabras sobre "pozos sépticos."

### HISTORIA

El pozo séptico tuvo su origen en Francia allá por el año 1861 bajo el nombre de "pozos mouras," nombre del propietario que lo descubrió. Se le describió como sigue:

Un recipiente herméticamente cerrado y de paredes impermeables para preservar su contenido de la acción del aire. Las sustancias fecales al disol-

---

<sup>1</sup> Leído en la Conferencia Provincial de los Oficiales de Sanidad en Tayabas, octubre, 1925.

verse en una masa de agua, sufren ciertas descomposiciones y transformaciones en virtud de las cuales resulta un líquido apropiado para darle salida al exterior por estar ya depurado aunque imperfectamente. .

Entonces se ignoraba o no se podía aún explicarse el por qué tenía lugar la autodisolución de las inmundicias depositadas en el interior del pozo.

En 1876 Mr. Philbrick de Massachussetts, América, fué más allá y ensayó tanques también herméticamente cerrados pero con dos compartimientos.

En 1882 el Abad Moigno en Francia trató de explicar la disolución de las materias sólidas que tenían lugar en los "pozos Mouras," atribuyéndola a la acción de los "microbios anaerobios de Pasteur."

Como los resultados obtenidos no fueron del todo satisfactorios antes al contrario dejaban mucho que desear, en 1893 los ingleses Scott-Moncrief después de varios ensayos y de ya algunos años de investigación idearon unos tanques mixtos que llamaron de "putrefacción y de filtración." Y más tarde después de detenido estudio de estos tanques por Mr. Houston, otra eminencia inglesa, fueron perfeccionados y desde entonces fué establecida la necesidad de un proceso de filtración después del de—desintegración o de liquefacción; y a los lechos preparados para este efecto se les dió el nombre de "Houston Beds" en reconocimiento a los meritorios trabajos de este Señor.

"Pero desafortunadamente," según Metcalf & Eddy, "el desagüe o líquido resultante de estos tratamientos y en la forma que se hacían o verificaban, dejaban todavía mucho que desear pues que estaban sujetos a alteraciones no deseables y consecuentemente allá por 1895 prevaleció una opinión de que los dos procesos el de *putrefacción* o *liquefacción* de las inmundicias en la oscuridad sin la presencia del oxígeno y el de *aireación* o *purificación* del líquido de la descarga con abundancia de oxígeno, debían de verificarse en dos etapas distintas," y así dicen estos autores, "en este año de 1895, Sir Donald Cameron construyó su famoso pozo de Belleisle que la llamó 'tanque séptico' como un tratamiento preliminar de inmundicias."

Se debe notar que hasta el año 1861 no se conocía ningún sistema de tratamiento de excretas con excepción quizás del significado que entonces se daba al dicho vulgar de: "el agua al río y la excreta a la tierra," y que aunque en 1861 a ciegas empezaron a ocuparse sobre el particular, no se llegaron a explicar las causas de los distintos procesos sépticos hasta el año 1893 o sea 32 años después. Y finalmente cuando Mr. Cameron

patentizó su famoso “tanque séptico” lo hizo solamente como un *tratamiento preliminar* y no como un método completo de disponer o tratar las inmundicias humanas. Algunos ingenieros y constructores de entonces, sin embargo, al ver los resultados obtenidos en los “pozos Cameron” tanto por la escasez de la acumulación de los sólidos como por el aspecto físico del líquido residual, creyeron ingenuamente que el problema de la disposición de excretas se había resuelto definitivamente.

Compañeros, he creído conveniente traer esta información porque por el año 1923 tropezé con uno de los más altos dignatarios de entonces, de nuestro Servicio de Sanidad que sostenía, en ocasión a un amago de epidemia en una ciudad del norte de Luzón “que el proceso séptico en un pozo séptico bien diseñado, es un tratamiento completo de disponer excretas y que el líquido resultante después del tratamiento, debía ser claro y cristalino”; y como después tropezé con otros compañeros de trabajo con las mismas o parecidas ideas, he creído conveniente, repito, y hasta oportuno en esta ocasión, no solamente porque dentro de poco tendréis un lugar de los más apropiado para la aplicación de pozos sépticos para el tratamiento de inmundicias humanas sino también para refrescar algunas ideas que aunque algo viejas considerando la rapidísima evolución sanitaria de los últimos años, aun prevalecen. Y naturalmente mezcladas con algunas recientes presentarles una breve recopilación de las teorías que gobiernan el funcionamiento y construcción de los tanques sépticos que por nuestras particulares condiciones locales de geografía y administración consideramos de suma importancia desde el punto de vista sanitario.

#### SU APPLICACIÓN

Si analizáramos con algún detenimiento el estado actual de los varios sistemas empleados para el tratamiento de las inmundicias humanas en poblaciones importantes y en general en las ciudades, observaremos que el “proceso séptico” es de aplicación muy limitada. Es solamente uno de los varios métodos conocidos y establecidos como “*tratamiento preliminar* de inmundicias,” como Uds. verán en el siguiente cuadro:

#### MÉTODOS PARA LA DISPOSICIÓN DE INMUNDICIAS EN CIUDADES

Tratamiento preliminar—

Cernido—

Grueso.

Fino.

**MÉTODOS PARA LA DISPOSICIÓN DE INMUNDICIAS EN CIUDADES—Continuación****Tratamiento preliminar—Continuación****Sedimentación—**

Rápida, tanque detritus.

**Lenta—**

Sedimentación simple.

Precipitación química.

Acción séptico.

Una cámara o pozo séptico. .

Dos cámaras—

Pozo Imhoff.

Pozo Oms.

**Métodos artificiales:****Tratamiento secundario—**

Campos de expandage.

Filtración intermitente en lechas de arena.

Filtración en lechas de contacto.

Filtración o modo de piego.

Filtración por activación del cieno.

Por procesos especiales.

Procedimiento.

Electrolítico.

**Tratamiento final—**

Hipoclorito en polvo.

Hipoclorito líquido.

Ozono.

Cloromina.

**Método natural o dilución—**

Directamente al mar.

Directamente a los lagos.

Directamente a los ríos.

**Métodos para la disposición final del cieno resultante—**

Por enterramiento.

Por desecación al aire.

Por desecación en prensas.

Por cremación.

Echándolo en grandes masas de agua.

Sin embargo, si pasamos al tratamiento de las inmundicias en poblaciones rurales dotadas de un abastecimiento de aguas, donde no existen grandes masas de agua para obtener una dilución segura y aun en las urbanas o en ciudades si es que no cuentan con una red de alcantarilla sanitaria, y naturalmente en residencias o instituciones aisladas, observaremos que con todo su imperfección, es el método más adecuado, el más conveniente por su simplicidad y hasta el más sanitario, sobre todo si está bien construído y existe un medio apropiado como dentro de poco tendrá Lucena, para la disposición final del efluente o descarga del pozo, como se podrá juzgar por la siguiente tabla:



## DISPOSICIÓN DE EXCRETAS PARA CASAS O INSTITUCIONES AISLADAS EN SITIOS RURALES O PARA PUEBLOS PEQUEÑOS

1. Donde no hay un sistema de aguas o procedimiento seco—  
 Hoyos en el suelo o de trinchera.  
 Cámaras artificiales.  
 Tanques especiales.  
 Kentucky.  
 Probetas L. R. S.  
 Pozos negros.  
 Sistema Antipolo.  
 Receptáculos.  
 Cubetas simplemente.  
 Cubetas con solución química.
2. Donde existe un sistema de aguas—  
 Pozo negro con fondo impermeable.  
 Pozo negro con fondo absorbente.  
 Pozo séptico.  
 Dilución en grandes masas de agua (ríos o mar).  
 Por sistemas más elaborados similar a los que se usan para ciudades.

## COMPOSICIÓN DE LAS INMUNDICIAS

Antes de entrar de lleno en la descripción del funcionamiento de los pozos sépticos quizás sea conveniente dar una ligera idea de la constitución de las inmundicias tal como la conocemos los ingenieros.

Llamamos “inmundicias” los productos residuales de la vida humana; e incluyen tanto los residuos líquidos que provienen de la vida ordinaria doméstica como las excreciones humanas. La mayor parte de su volumen la forma y constituye el agua. La parte sólida está representada gráficamente en la Figura No. 1, donde se demuestran en proporción y en volumen y también se da su composición.

De un barril de inmundicias

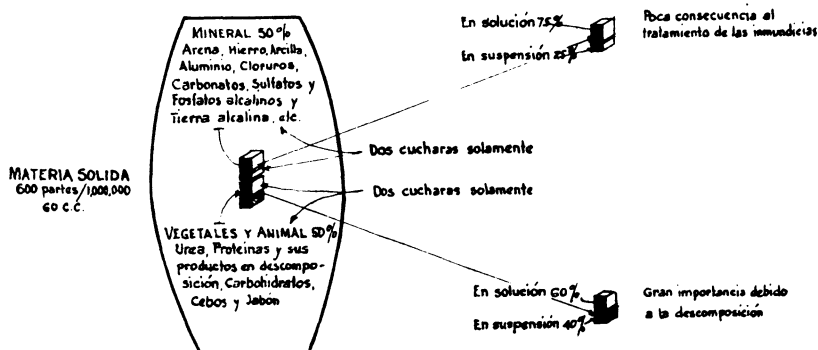


Fig. 1.

Además de estos elementos también contiene una flora microbiana que viven, se desarrollan y mueren según las condiciones del medio en que están. En general, se puede decir que los tratamientos preliminares para la disposición de inmundicias son favorables para el desarrollo de esta flora, pero los procesos finales son fatales y se caracterizan por la considerable reducción en su número.

Los ingenieros consideramos a las bacterias de las inmundicias como útiles y por el trabajo que rinden seguimos vuestra clasificación en aerobios y anaerobios según si viven y actúan en presencia del oxígeno ya sea del aire o ya del agua, o en su ausencia. Y con excepción del grupo de los Colis no nos importa saber más de vuestra bacteriología.

Como las bacterias en las inmundicias están íntimamente asociadas con la materia orgánica contenida en ellas, veamos que funciones tiene la una y que transformaciones recibe la otra con el fin de conocer la acción que tiene lugar en los tanques sépticos.

#### TRANSFORMACIÓN DE LAS MATERIAS ORGÁNICAS

Las sustancias orgánicas de las inmundicias (como por ejemplo los proteídos, la urea, los carbohidratos, grasas y jabones) tienen composiciones muy complejas. En los laboratorios se conocen sus componentes mediante la hidrólisis (hydrolisis) o desociación de las moléculas por la acción de ácidos y de alkalis. Pues bien esta misma hidrólisis se verifica en los tratamientos de inmundicias en los procesos sépticos mediante la acción de los microbios anaerobios y de las enzimas (enzymes) o sustancias formadas por las bacterias. Este proceso microbiano llamamos de decomposición o de digestión porque durante ella se reducen y desintegran las partículas complejas de las sustancias orgánicas en otras de forma más simple, y éstas a su vez en acciones sucesivas en sustancias solubles, en gases y en agua.

Así, por ejemplo, se sabe que los proteídos se convierten en los pozos sépticos en albuminoides y peptonas, para más tarde reducirse en ácidos (amino) y otros compuestos aromáticos (tyrosin), y phenoles (skatol e indol). Los carbohidratos en ácidos butíricos y lácticos, agua, dioxidos de carbono e hidrógeno. Las celulosas aunque muy lentamente también se hidrolizan y se licuan. Las grasas y sustancias saponificadas también se reducen lentamente por hydrolisis en ácidos: palmítico, oleico, butírico, y en glicerinas las cuales después se descomponen en gases como los: dioxidos de carbón, hidrógeno y metano.

## PROCESO SÉPTICO

Cuando Cameron construyó su tanque séptico lo hizo en tal forma "que las inmundicias pasaran por ella lentamente con el fin de dar oportunidad a que se sedimentaran las materias sólidas o sea retenerlas en el interior en donde se sujetarían a la acción de los microbios anaerobios que trabajan en la oscuridad" y desde entonces el proceso de sedimentación acompañado por la descomposición de las materias orgánicas por microbios se ha llamado "proceso séptico," y los tanques donde se verifican "tanques sépticos." Estos nombres dados para el tratamiento de las excretas, parecen sugerir a las personas no adiestradas en estas materias que este tratamiento tiene propiedades mágicas de disponer continua y completamente los residuos humanos, y que "el líquido producto de esta descomposición o el efluente es puro, claro y cristalino." Y esto, Señores, no es cierto. En primer lugar, tiene que haber necesariamente una acumulación en el interior del tanque puesto que le cargamos en parte con materia sólida; y en segundo lugar, se sabe por análisis que el líquido residual y efluente es sumamente poluto por tener una flora grandísima de microorganismos como se apuntó anteriormente, y por consiguiente es sumamente peligroso. Por su construcción y forma está fuera de duda que esencialmente es un tanque de sedimentación. Recién construido y operado se observa que sirve admirable para este fin. Pero a medida que las inmundicias se retienen en el tanque, las sustancias orgánicas empiezan a descomponerse consumiendo el oxígeno del agua y desde entonces, los microbios anaerobios se reproducen libremente y aumentan considerablemente su número.

Dejando a un lado las sustancias minerales como productos de la descomposición y que se retienen y se quedan en el fondo del tanque como sustancias inertes, sigamos las sustancias orgánicas. Inmediatamente y de una manera progresiva debida a la acción microbiana éstas empiezan a descomponerse formando sustancias más simples, esto es, cada vez más adaptables para los procesos posteriores hasta convertirse en compuestos solubles, al que da razón a que este proceso se le denomine también un proceso de liquifacción. Durante la descomposición se producen como ya se mencionó más arriba, varios gases como el metano, dióxidos de carbono, amoníacos, nitrógeno, hidrógeno y otros. Y esto explica la natural reducción de las materias sólidas que pasan y se retienen dentro del tanque.

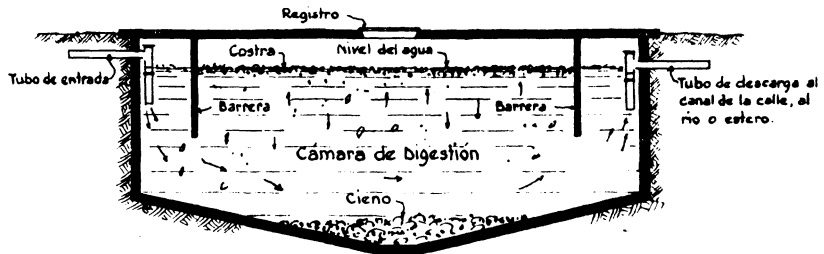
## FORMACIÓN DE LA COSTRA FLOTANTE (SCUM)

Los gases productos de la descomposición y arriba expresados, se forman y se retienen en los intersticios vacíos de las materias sólidas que entran dentro del pozo o tanque, y cuando la producción es excesiva se adhieren o se sujetan mecánicamente en la periferia de las partículas o pedazos de materia sólida sedimentadas o depositadas en el fondo y sometidos al proceso de descomposición. Pero cuando la cantidad de gas generado en cada caso aislado es tal que puede elevar la partícula o parte sólida que la sujeta y gravita sobre ella, entonces la eleva a la superficie del agua del tanque en donde se escapa o se procura libertad hacia el espacio vacío que existe en la parte superior del tanque, esto es, entre la superficie del agua y la tapadera o cubierta del tanque. De lo contrario las burbujas de gas mantienen la parte sólida en suspensión en cuyo caso dicha parte sólida o partícula se queda flotando sobre la masa líquida del tanque. Y así continuaría permanentemente quizás si es que por alguna causa externa no viniera algo en ayuda para libertar el gas. Muy bien podría ocurrir también que al flotar se adhiriera a materias flotantes como papeles, palitos, etc., que se encontraran ya en la superficie; que aun una vez libertado el gas se entrelazara con otras sustancias filamentosas como fibras, pelos, etc., en cuyo caso quedaría suspendido por más o menos tiempo hasta que una corriente de agua o una ráfaga de viento interviniera para romper el equilibrio, en cuyo caso ésta volvería al fondo para más tarde volver a subir y repetir la misma operación una vez vuelto a producir suficiente cantidad de gas y así sucesivamente mientras tuviera alguna sustancia orgánica putrescible y susceptible a la acción microbiana. Si las condiciones en el interior del tanque fueran tales que los sólidos elevados por los gases no sufrieran ninguna perturbación, allí se quedarían flotando y después de algún tiempo se conglomerarían y formarían una masa o costra que cubriría toda la superficie del líquido (Véase Fig. 2). También sucede a veces que en esta trayectoria de subidas y bajadas de las partículas sólidas acompañado con la corriente de la masa líquida debido a descargas ulteriores al tanque, llegaran a salir algunas de ellas en el desagüe. Por este motivo es conveniente proveer al tanque no precisamente de varios compartimientos sino de parapetos o barreras (*baffle walls*) para que obstruyan o se interpongan a la corriente en el interior y minimicen este inconveniente o de lo contrario hacer la descarga en la parte media de la masa líquida del tanque

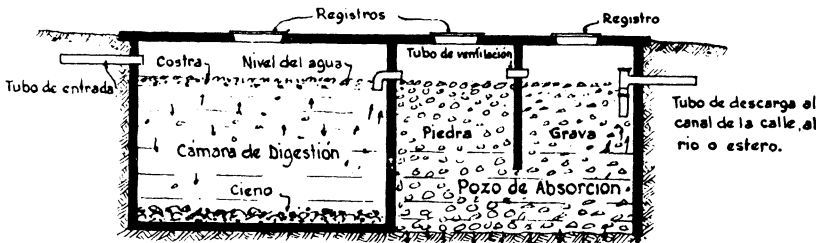
o próxima a ella tal como se demuestra en la Figura No. 2 que es la zona en donde la actividad microbiana es relativamente pequeña.

#### NATURALEZA DEL EFLUENTE O DESCARGA

Con lo que se acaba de decir es claro y evidente que no se debe esperar que el efluente o descarga de los tanques sépticos sea claro o cristalino y mucho menos, puro, puesto que como se ha dicho y repetido el objeto del tratamiento séptico es el de retener y reducir las materias sólidas contenidas en las aguas sucias



(a)



(b)

Fig. 2.

para licuarlas y gasificarlas mediante la acción bacteriana. El que quisiera más información sobre este particular yo le referiría al "Bulletin" de nuestro Servicio correspondiente al mes de abril de 1924.

Y si se deseara tratar este líquido residual o descarga se podría valerse de alguno de los procesos de oxidación o algún tratamiento secundario o mediante la disinfección tal como se ha hecho constar en la tabla en que se especificaron los métodos usados para la disposición de inmundicias para ciudades, con el fin de restaurar el oxígeno eliminado y consumido durante el proceso séptico, y eliminar los microorganismos, de este modo

hacer que el efluente no sea putrescible y por lo tanto objeccionable.

### TIPOS DE POZOS SÉPTICOS

Por las figuras que se representan en la Figura No. 3 se verá que hay varios tipos de pozos sépticos. Los que se demuestran son solamente unos cuantos de los muchos que hay en uso en varios países.

Se observará también que en alguna de las figuras se representan combinaciones del proceso séptico con el de filtración que es esencialmente un proceso de oxidación o aireación (Figs. 3-b and 3-c). En uno se utilizan drenajes superficiales (*subsurface drainage*) (Fig. 3-c); en otro, pozos absorbentes al estilo de los sistemas Antipolos (Fig. 3-c derecha); y en otros están conectados a los canales superficiales para seguir la disposición final que se da al desagüe de las calles tal como se verificará y se hará en Lucena (Fig. 3-a).

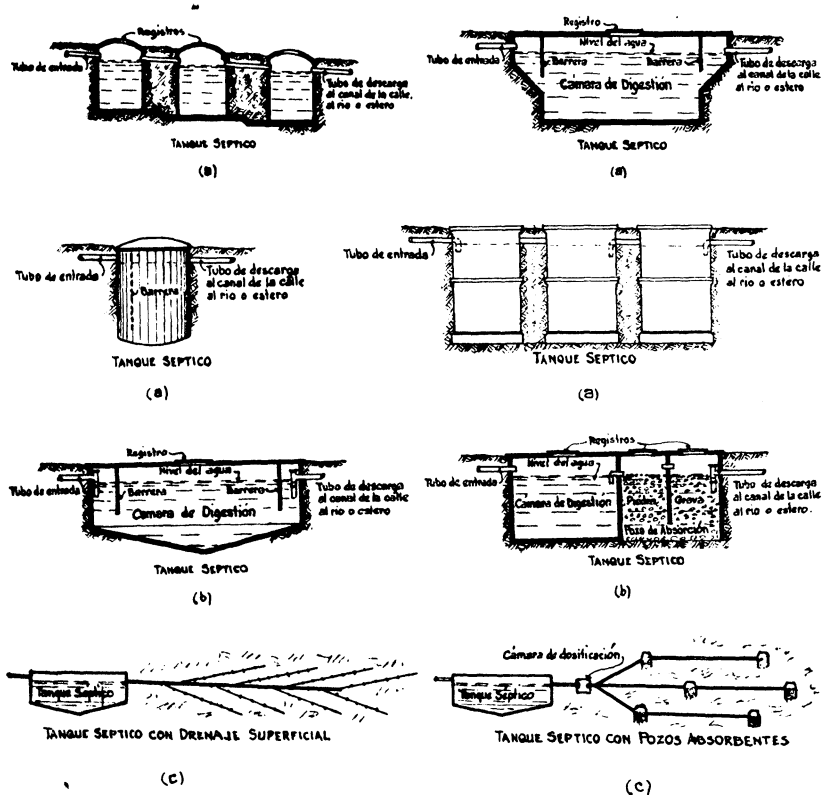


Fig. 3.

Existe un tipo "standard" que todos vosotros conocéis y que desafortunadamente es del Servicio de Sanidad de Filipinas es de 3 compartimientos (3-b derecha). Uno de los compartimientos es propiamente el tanque séptico; otro compartimiento está relleno con piedra partida y el tercero relleno con gravilla y arena gruesa. Es un tipo de construcción similar al tanque de Scott-Moncrief que fueron establecidos allá entre 1891-1893. Digo desafortunadamente porque se divisó o se diseñó este tipo al parecer para hacer las veces de pozos sépticos y de filtros al mismo tiempo, al que sugieren al público que las usa de dar un efluente más puro que los otros tipos. Resultado que en igualdad de circunstancias con respecto al uso de otros tipos y sobre todo en tamaño no es cierto y aun no comprobado en la práctica. Se ha tratado de suprimir el uso de este tipo, pero la idea de filtración a través del material poroso parece estar bien inculcada en la mente del público y en particular entre constructores, los cuales se resisten de usar cualquier otro tipo. Como ello (para las condiciones de la Ciudad de Manila) no envuelve más que una cuestión económica, creemos que se puede tomar libremente una actitud indiferente con respecto al particular. Pero no estaría de más llamar la atención de los constructores de provincias para que tomen las debidas precauciones.

Y la explicación es bien sencilla. Habíamos mencionado que el tratamiento apropiado para el líquido residual procedente de los tanques sépticos había de ser una de oxidación o que es lo mismo de aireación. Una manera de hacer y conseguir esto es el aprovechar de la porosidad del suelo (Fig. 3-c) o de un lecho artificial de arena o grava y combinarlo con descargas automáticas ya por medio de aparatos desifcadores con descarga automática e intermitente tal como se demuestran en la Figura No. 4 o por medio de compuertas controladas al libre albedrío y a mano (Fig. 4-c).

El objeto de la intermitencia es conservar el aire que existe en los poros o espacios vacíos del suelo o lecho, esto es, después de cada aplicación o descarga permitir un lapso de tiempo de descanso con el fin de dar ocasión para la reaireación y, por tanto, para la oxidación de las materias orgánicas en solución o suspensión del efluente mediante el aire que penetra en el subsuelo. Cosa que no es posible conseguir en nuestro tanque séptico de tres (3) compartimientos tal como se ha estado recomendado tiempo atrás, por estar siempre completamente anegado. Además del defecto que se acaba de apuntar, este tanque es mucho más costoso que los tanques simples de un solo com-

partimiento no solamente por ser su construcción más complicada sino también por el exceso de material que requiere, y por su conservación o mantenimiento necesariamente más complicado.

Por experimentos verificados en el extranjero se ha visto que la descarga de los pozos o tanques de dos (2) o más compartimientos vacíos o pozos-tanden (Fig. 3-a al primero y al último) en igualdad de condiciones no son mejores en calidad a los de un solo compartimiento.

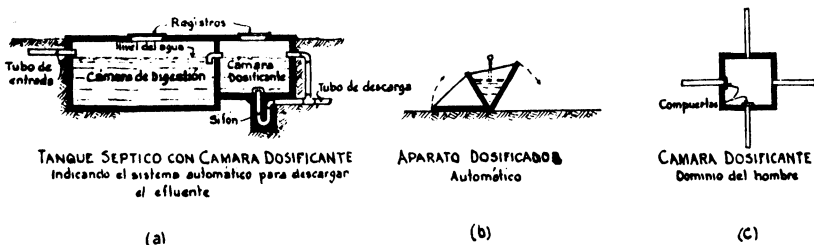


Fig. 4

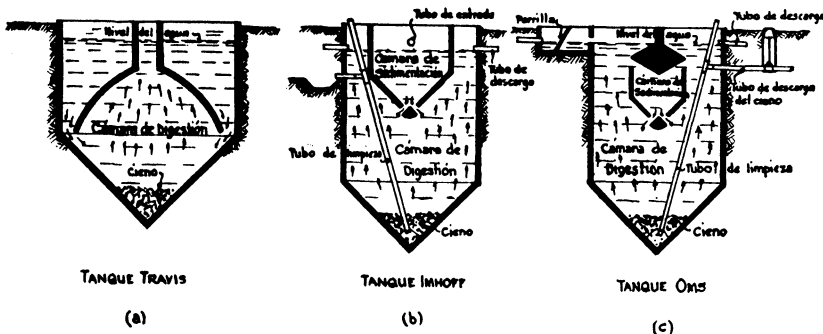


Fig. 5

Vuestra oficina de ingeniería tiene varios planos tipos de distintos tamaños desde una capacidad para 10 personas hasta 150. Y con placer prepararía otros dibujos si así lo solicitaran.

#### TANQUES IMHOFF

Por el año 1905 con los conocimientos adquiridos en el funcionamiento de los pozos sépticos se trató de eliminar la ebullición que tenía lugar dentro de la cámara de digestión o de descomposición por el ascenso y descenso de las materias en suspensión y, por tanto, también la formación de la costra en el interior



de dichos pozos y a ver si de esta manera se podría hacer menos putrescible el efluente de los tanques sépticos. Dr. W. O. Travis en Hampton, Inglaterra, introdujo su famoso "Hampton o Travis tank" (Fig. 5-a) con miras de conseguir este fin. Procuró que la digestión o proceso de putrefacción o de desintegración se verificara no en un tanque separado sino en el mismo tanque pero en un piso o compartimiento inferior, esto es, en vez de dividir el tanque en compartimientos en sentido longitudinal los hizo en la forma vertical, uno sobre el otro, y de esta manera destinar el compartimiento superior para el proceso de sedimentación solamente.

En el año 1907, el Dr. Karl Imhoff desde Emscher, Alemania, construyó su famoso tanque que es semejante al Travis en la disposición de las cámaras de digestión y sedimentación, pero perfeccionado en el sentido de aislarlas el uno del otro por medio de planos inclinados como se demuestran en la Figura No. 5-b.

En efecto con este procedimiento se eliminaron algunos de los defectos de que adolecen los pozos sépticos sobre todo los usados en las instalaciones grandes, tales como la eliminación o aminoración de olores, menor cantidad de materias en suspensión en el efluente y evitar el espumeo tan objeccionable que se han notado en algunas instalaciones y por consiguiente mejorar la calidad del líquido residual o desagüe. Sin embargo, en las instalaciones pequeñas apenas si se notan estas ventajas; esto quizás se deba al exiguo volumen de las aguas sucias que se tratan en ellas. Pero teniendo en cuenta sus principales desventajas como son en su mayor costo y en el mayor cuidado que se necesita para su operación, estos pozos se hacen no recomendable para instalaciones pequeñas.

En cuanto a su funcionamiento se puede decir que es similar al del tanque séptico ordinario tal como se ha explicado, con la única diferencia que se apuntó más arriba de verificarse las operaciones de sedimentación y digestión en dos cámaras distintas y sobrepuestas. Por este arreglo la duración del tratamiento es más corto y el proceso mucho más rápido. El período invertido ordinariamente entre la entrada de la inmundicia al tanque y su salida es solamente de dos horas, mientras que en los pozos sépticos ordinarios no es conveniente que sea menor de 8 horas. La limpieza de los tanques Imhoff se hace de una manera automática por medio de un tubo que se demuestra en la Figura No. 5-b.

## TANQUE (OMS)

En el año 1920 aparecieron en Wiesbaden, Alemania, otra variedad de pozos sépticos muy similares a los Imhoffs, con una pequeña innovación solamente en la cámara de sedimentación. Esta se ha convertido en un conducto sumergido a manera de un sifón, cerrado por todos los lados a excepción de unas hendiduras que se hacen en fondo y en la parte superior del sifón tal como se representa en la Figura No. 7. Como se ve, la cámara que se pudiera llamar de sedimentación está colocada dentro de la masa líquida de la cámara de digestión. Con este arreglo se consigue que la velocidad de las aguas sucias que penetran en el tanque sea menor. Por lo tanto, el proceso de sedimentación se podría llevar a cabo mejor y el período de tratamiento, por lo tanto, podría ser aún mucho más corto que los Imhoffs. Por consiguiente este tipo especial de pozo tiene la ventaja de hacer posible la reducción en su tamaño para el mismo trabajo de los otros tipos. Las sustancias más pesadas pasan a través de las hendiduras del fondo mientras que las sustancias más ligeras pasan también a la cámara de digestión por las aberturas superiores.

En esencia funcionan de la misma manera que los Imhoffs, y bajo el mismo principio de los pozos sépticos. Se alegan en su favor el producir un efluente más clarificado que los Imhoffs y de más fácil tratamiento ulterior. A nuestro modo de ver y considerando solamente la parte que nos interesa, adolece en mayor grado los defectos apuntados a los tanques Imhoffs para instalaciones pequeñas. Y para las instalaciones grandes en su difícil construcción y más complicado mantenimiento.

## LIMPIEZA DE LOS TANQUES

Con lo que antecede creemos haber cubierto la parte que más pueda interesarles en relación con el funcionamiento y construcción de los tanques sépticos. No es posible, en una ocasión como ésta, cubrir todo el campo del proceso séptico. Hemos prescindido adrede de tocar muchos detalles estructurales que tienen alguna significación sanitaria. No quisiera terminar, sin embargo, sin decirles algo sobre el mantenimiento sanitario o la necesidad de la limpia de los tanques sépticos cualquiera que sea su tipo.

Los tanques sépticos tal como se diseñan o se representan en los dibujos "standards" de vuestra división de ingeniería sanitaria, deben ser limpiados por lo menos una vez el año; y con más frecuencia cuando por condiciones no previstas han hecho

que la acumulación de la costra flotante o del cieno o sedimento del fondo del tanque, o de ambos, sean tales que conviertan el agua residual o descarga en un líquido repugnante o muy ofensivo.

La única manera de conocerlo y de evitar el llegar a este extremo es mediante la inspección periódica, preferiblemente cada 3 meses, tanto del interior como del exterior del tanque y también del estudio del carácter del desagüe de los tanques instalados. Se debe prestar singular atención a las rajaduras del cuerpo de tanque y ver si existen filtraciones. Un desagüe con una apariencia muy turbia o la presencia de muchas materias en suspensión indican la necesidad de limpieza. En instalaciones grandes se puede probar la eficiencia de los pozos sépticos o determinar el período de limpia tomando ejemplares en botellas blancas, tanto del desagüe como del líquido que penetra en los tanques. Se las deja reposar por espacio de dos horas y se compara la cantidad de sedimentos depositados. La presencia de bastante cantidad de sedimentos en el desagüe es señal de que el tamaño del pozo se ha reducido por las materias depositadas y, por lo tanto, se hace preciso el limpiarlo. Existen unos vasos graduados de forma cónica y que se llaman "vasos Imhoffs" que se utilizan con este fin; pero en su falta una botella ordinaria blanca de los de a litro es suficiente y se pueden obtener conclusiones acertadas. Si se desea obtener resultados más prominentes, después de ser llenadas las botellas se las tapa bien y se le pone boca abajo y de esta manera se igualaría en algo el resultado a los obtenidos por los vasos Imhoffs. En las instalaciones pequeñas un palo o mejor un tubo de cristal con un tapón operable en el extremo opuesto indicarían mejor que cualquier otro procedimiento si la acumulación en el interior es excesiva o no.

Al limpiar se debe tener en cuenta que la acumulación del fondo del pozo o sea el cieno es la materia digerida o mineralizada que está de más y consecuentemente deba ser la materia que se debe eliminar o extraer. Al hacer esto es conveniente agitar o romper la costra flotante una semana antes de verificarse la limpieza y agitarla un poco con el propósito de que toda ella se sumerja y sea sometida a la acción microbiana. Al verificarse esta operación es de esperar el desprendimiento y difusión de gases por cierto muy ofensivos; por lo tanto es aconsejable que tanto esta operación como la de limpia se ejecuten o se hagan durante la noche. Por ningún concepto se debe introducir desinfectante en el interior de tanque. El cieno que se

extrae debe ser enterrado en zanjas superficiales previamente abiertas las cuales una vez depositadas deben ser inmediatamente recubiertas teniendo especial cuidado de que esta operación se verifique sin peligro de contaminar los abastecimientos de agua más próximos.

Gracias por vuestra atención.

#### BIBLIOGRAPHY

- METCALF & EDDY. "Sewage Disposal."  
KUNNICUT, PRATT & WINSLOW. "Sewage Disposal."  
GALLEGOS. "Saneamiento de Poblaciones."  
HARDENBERG. "Home Sewage Disposal."

## MISCELLANEOUS

---

### ABRA

The health condition of the province for the month is good, although there was a slight increase of mortality in Lagangilang. Some sporadic cases of unspecified dysentery were registered in Lagangilang and Bangued, where there were 7 cases and with 3 deaths. Seven cases with 3 deaths of influenza was also registered in Pilar, Sal-lapandan and Villaviciosa. Five cases of measles were discovered in Bangued.

### AGUSAN

A malaria survey was made by Doctors Manalang and De Jesus in the barrio of Ampayon-Tagibu 7 kilometers from the town. The central school of Butuan was inspected and 100 children were given physical examination. One case of splenomegaly was found.

Thru the courtesy of the owner of the local cinematograph, three educational films were exhibited.

During the month, the officials of this province were honored by the visit of Vice-Governor Gilmore and his party, composed of Mrs. Gilmore and Directors Bewley and Vargas. They went around the town, inspected the offices, leper cottage, the new and old hospitals, and other buildings. Doctor Manalang, chief of the Section on Malaria Control and Doctor De Jesus, district health officer of Davao, stopped here to conduct a malaria survey and control in the province for nine days.

### ALBAY

Dr. Felipe Arenas arrived here on March 18th, and left for Sorsogon on the 24th. Practically every town in the district was inspected. This health official found things very satisfactory.

Three hundred sixty yaws cases were treated in Catanduanes, 245 in Bato, and 115 in Virac.

### ANTIQUE

The district health officer left for a conference with the Director of Health regarding the construction of the Antique Hospital. The president, First Sanitary Division, has been designated by the district health officer to take his place during his absence.

### BATAAN

In order to determine the places where Antipolo closets should be constructed, a survey of the town was made by the district health officer with the president of the committee on sanitation of the municipal council.

The district health officer gave a talk before the Municipal Council of Dinalupihan and Orion enlightening them about the advantages that could be derived from a Sanitary Code as submitted to that body in September of last year, and urging immediate approval thereof. The provincial treasurer and provincial fiscal have also dwelt upon the importance in approving the measure.

A campaign of smallpox vaccination was conducted in Hermosa, Dinalupihan, and Samal on March 28, 29, and 30, taking advantage of the ecclesiastical confirmation in those places. Five sanitary inspectors with the president of sanitary division and the district health officer were detailed to conduct the work, which was a success, there having been vaccinated more than 545 children from one month up to seven years of age, 90 per cent of whom have never been vaccinated.

#### BATANES

The increase of mortality during the month was due to the outbreak of acute bronchitis since last month.

Incidence of important communicable diseases by municipalities: Tuberculosis—Basco 1-0, Mahatao 2-0, Ivana 1-0; Acute bronchitis—Basco 3-0, Mahatao 5-0; Trachoma—Basco 2-0, Ivana 3-0, Mahatao 2-0, Uyugan 1-0; Diarrhoea and enteritis—Basco 2-0, Ivana 1-0.

#### BATANGAS

The most important work accomplished during the month were: 32 conferences were given to presidents of sanitary divisions, 16 schools and 1,255 school children were inspected; and physically examined respectively; 84 Antipolo closets were being constructed in 13 municipalities; and 747 persons were given mixed vaccination.

The death rate of the province was slightly higher in comparison with that of last month, the health index being 18.63 as against 18.41 of last month.

Thirty-seven cases of yaws at Bauan and seven cases at Taal were given treatment with neosalvarsan during the month. The party of the Director of Health gave demonstrations on splenic enlargement and malaria survey at the barrio of Caysasay, Taal, on March 11, 1927.

Demonstration of how to apply "Paris green" upon mosquito breeding places was also performed by assistant chief of the Malaria Control Section, Mr. Francisco Gaisas.

Three lepers were collected from the province during the month and were sent to the San Lazaro Hospital.

#### BOHOL

Although there were some cases of varicella, measles, and amoebic dysentery registered in some municipalities, yet the condition was not at all serious, the cases being only of sporadic nature. Nevertheless, the necessity of extensive campaign against the diseases is stressed to the corresponding sanitary inspectors under the direct charge of the respective presidents of sanitary divisions.

During the middle of March, Dr. Hipolito Balon has inspected the municipalities of Baclayon, Dawis, Cortes, Panglao, Loon, Clarin, Guin-

dulman, Cogtong, Pagahat, Batuanan, Mabini, and Anda. He found the sanitary condition of these places good.

Sporadic cases of varicella were registered in the following municipalities: Valencia 26-0, Tubigon 1-0, Jagna 1-0, Anda 19-0, Tagbilaran 1-0, Ubay 6-0, and Mabini 1-0; the sporadic cases of measles were from the municipalities of Jagna 11-0, Carmen 3-0, and Valencia 9-0; and the amoebic dysentery were from the municipalities of Jagna 1-0 and Bali-ljan 7-1.

Doctors De Jesus and Manalang were in the capital on March 15th, visiting the municipality of Cortes in order to make an investigation of a certain place to determine the existence of a focus of malaria.

Vice-Governor Gilmore visited this province on March 18th. He made an inspection of the provincial hospital, the public dispensary of Tagbilaran, the office of the district health officer and other public buildings.

#### BUKIDNON

Thru the initiative of the district health officer, a baby contest was held in Maluko on the occasion of the town fiesta. Dr. P. Gutierrez has been detailed to Maramag and Kalugmanan to undertake a yaws campaign in those places.

#### CAMARINES SUR

One of the outstanding activities of our personnel during the month was the extensive anti-smallpox vaccination, specially in Minalabac and Naga where the district nurses and the respective sanitary inspectors have concentrated their efforts. Particular emphasis was laid to the vaccination of newly-born children and those non-vaccinated and previously negative. During this campaign, anticholera injections were also given.

#### CAPIZ

During the first three days of March, a convention of the non-technical inspection personnel was held. This convention was a success not only from the standpoint of attendance, but also from the benefits derived therefrom.

#### CEBU

Public Welfare Commissioner Dr. Jose Fabella, special investigator, delegated by the Council of Hygiene to make a study of the prevalence of venereal diseases in the City of Cebu was extended coöperation and furnished data available on these diseases by the district health officer.

The general health condition of the district was very satisfactory. During the month communicable diseases of sporadic nature was registered in this district, such as influenza, tuberculosis, dysentery, measles, and varicella.

#### COTABATO

The district health officer spent the whole month with Dr. C. Manalang, chief of the Malaria Section, in making a survey of the malaria situation in the province. The work was greatly hampered due to the flood. During this period blood and splenic index examinations of school children were performed. As a result of this examination, it was found that the infection of malaria in Agusan Province extends as far as Santa Josefa.

The general vaccination of the inhabitants of Santa Cruz was continued during the month by the Vaccinating Party No. 8.

In the municipal district of Moncayo and Camansa malaria was found to be prevalent among the pupils, and so a big amount of quinine was distributed for prophylactic as well as curative purposes. Malaria control work will be resumed as soon as the supply of Paris green is received.

Yaws cases were found in the municipal district of Camansa, and accordingly the patients were given treatment in the dispensary thereat. A public lecture on malaria control work was given in the schools and the coöperation of the teachers requested. Malaria and hookworm are still the prevailing diseases of the province. A campaign of smallpox vaccination was began in the municipality of Santa Cruz during this month. A total of 3,096 persons were immunized against the disease.

#### ILOCOS NORTE

A regular meeting of health officers and district nurses was held on March 1, 1927. Health problems and promotion of efficient service were the principal subjects discussed.

Measles and influenza were prevalent among the municipalities inspected. These diseases were hard to check due to the open disregard of the people to sanitary regulations. However, the health officers have always exerted their efforts to eradicate these maladies.

The Health Bulletin published by this office are issued to the public as usual twice a month. In view of pressure of work it is being contemplated to make the bulletin a monthly publication, but the number of copies is to be increased. The bulletin has been and is financed by the health officers of this district, but it would be more advantageous to have the Government pay for it.

#### LAGUNA

In Biñan, deaths of many small children was reported, leading to an immediate order of this office of a house-to-house inspection by the district nurse. It was discovered that measles has caused this epidemic, and immediately thereafter, control work was put in operation until it was stamped out.

Many people of Cavinte attended the demonstration of the mosquito-carrier of malaria and every one who attended the health booth was impressed of what they saw.

#### LANAO

On March 15, two chiefs of vaccinating parties and their men went around the district of Ragain where the vaccination is now being conducted to confer with the different sultans who refused to welcome vaccination in their places. Two sultans were prevailed upon to have their men vaccinated. Enemies of vaccination are expected in other districts and the campaign has been very slow even among the peaceful and law-abiding Moros due to fasting which began on the first week of this month to last until the first week of next month.

An ordinance regarding the supervision of rice mills was submitted on March 21st to the provincial board for the municipal districts and to



the municipal councils of the regularly organized municipalities. The ordinance for the municipal districts has already been approved. The same action is expected from the councils of regular municipalities, like Iligan, Dansalan, and Malabang.

#### MASBATE

On account of the outbreak of dysentery epidemic in the barrio of Mobo, all the houses found not provided with Antipolo closet were ordered to provide same within 3 days.

#### MINDORO

About 80 school boys and girls were examined in the Puerto Galera Elementary School by the president, First Sanitary Division, and it was found out that 20 of the pupils were suffering from chronic malaria. The parents of the school children were advised to give quinine treatment to all the pupils found with enlarged spleens.

#### MISAMIS

A plan of hookworm campaign in the province with regard to personnel in the field and the work to be accomplished during the campaign was scheduled. The campaign started on March 17, 1927. A systematic propaganda in the form of bills, bandillos, posters, house-to-house visits, and personal conferences were made. The success of the enterprise was due to the full coöperation and response given by the public.

This office had the honor to welcome the following personages: Vice-Governor Gilmore, Dr. Perpectuo Gutierrez, service skin diseases specialist, and Dr. Wang, Chinese Consul General for the Philippine Islands.

#### MOUNTAIN PROVINCE—CALINGA

The work of the vaccinating party under the supervision of this Office was found very satisfactory. No force was employed to carry out vaccination.

#### NUEVA ECIJA

An investigation of beriberi cases at Peñaranda was made by Dr. Lopez Rizal, chief of Division of Communicable Diseases; together with Doctors Sison, Salud, and Lacuna, the president of the sanitary division thereat.

#### NUEVA VIZCAYA

The prevailing diseases were malaria, influenza, and acute bronchitis. There occurred 7 deaths from tuberculosis of the lungs and 6 deaths from pneumonia. The deaths rate for the month was 42.70 as against 54.50 of the previous month.

The general sanitary condition of the district is fairly satisfactory.

#### OCCIDENTAL NEGROS

The general health condition of the district during the month was good in spite of the existence of varicella cases.

## SORSOGON

There were 3,200 smallpox vaccinations made during the month, 1,300 injections against cholera, and 150 against typhoid were performed in the district.

There were 152 patients given treatment in the public dispensaries, including those attended by the district health officer. Out of this number, five were suffering from yaws and four were bitten by dogs. Seventy-three injections were given for 13 lepers isolated in Tahiran Island.

The offices of sanitary personnel in Castilla, Bulusan, Barcelona, Casiguran, Juban, Bacon, Bubar, and Sorsogon were inspected by the District Inspector Dr. F. Arenas and the district health officer. The vaccination record of the places were duly verified.

The district inspector, Dr. F. Arenas, arrived in Sorsogon on March 24, 1927, and left on March 26, 1927, for Gubat on steamship *Magallanes* via Bulan.

## SULU

Much time was devoted to malaria control and survey work. Two sanitary employees were detailed here with sufficient materials to conduct anti-malaria campaign. Plenty of anopheles larvæ were found in different places. Road dust is being prepared for the immediate control of the infected places.

The 1926 balance of the appropriation for the construction of the nurses' dormitory and dispensary building in Parang, has already been set aside. As planned by the district engineer, the nurses' dormitory will measure 9 meters by 10 meters plus a passage or porch of 2 meters by 7 meters. This building will cost about ₱3,500. The dispensary building at Parang will have a size of 9½ meters by 5½ meters plus a kitchen and toilet of 2 meters by 4 meters costing ₱2,100. Both buildings will be made of strong materials.

Thirteen districts were furnished with materials for malaria control work and the respective field personnel were given the necessary instructions. Due to lack of assistants, the employees complained of hardship encountered in the field. An amount of ₱600 was set aside by the provincial board for this particular work and effort will be made so that this money will be used to hire laborers.

## SURIGAO

In the main town of Surigao, a slight increase of the incidence of dysentery was noted during the month. In sitio Magpayang, barrio Mainit, Placer, alarm was received on March 15, from the *teniente del barrio* of the existence of cholera epidemic in the sitio. Immediately, the district health officer went to the place and found two cases with symptoms of cholera, but after close investigation, it was concluded that the sickness was due to food poisoning. These cases were treated and all saved.

In the municipality of Cantilan cases of measles were reported, but the disease was brought under control by the division personnel. In other municipalities, except Bislig, the general health condition is satisfactory.

**TARLAC**

During the month, the health condition of this district was fairly good. One death from diphtheria was registered in the municipality of Bamban. Preventive measures were taken.

**TAYABAS**

As a result of the finding of the Bureau of Science to the effect that wild beans submitted by the district health officer for laboratory examination contain hydrocyanic acid, resulting in the death of three persons at barrio Lusakan, Tiaong, on February 7, 1927, a circular was issued warning the people to refrain from eating such poisonous vegetables.

**ZAMBALES**

The general health condition of this district was fairly well. The communicable diseases registered were: A case of typhoid fever in San Narciso and varicella in Iba. Preventive measures were taken consisting of isolation of patients, concurrent and terminal disinfections, and vaccinations of contacts against typhoid and smallpox.

From March 3rd to 5th, the assembly of the second group of the sanitary inspectors was held at the capital of this province, all sanitary inspectors of Santa Cruz, Candelaria, Masinloc, Palauig, Iba, Botolan, Cabangan, San Felipe, San Narciso, and the sanitary inspector-at-large attending.

**ZAMBOANGA**

A good number of control areas have been established in the municipality of Zamboanga. A demonstration regarding the treatment of mosquito breeding places at the municipal district of Margosatubig and Isabela was well attended by the sanitary personnel. A survey will soon be made over the northern part of the district; namely, Dapitan, Dipolog, and Lubungan, and Mr. Pantaleon L. Baños, field director of the malaria control work, will leave on the first available transportation to undertake this work in these places.



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of March, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1927<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	294,137
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,538</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,238
5. Quiapo.....	15,862
6. San Miguel.....	4,434
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,232</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,816
9. Intramuros.....	14,625
10. Ermita.....	16,139
11. Malate.....	16,471
12. Paco.....	16,037
13. Pandacan.....	5,861
14. Santa Ana.....	6,676
<b>Total.....</b>	<b>80,624</b>
<b>Grand total.....</b>	<b>320,394</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY  
FROM HOURLY OBSERVATIONS, MARCH, 1927**

EDUCED

Date	Pres- sure mean <sup>1</sup>	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	<i>mm.</i>	<i>°C.</i>	<i>°C.</i>		<i>°C.</i>		<i>°C.</i>	<i>°C.</i>
1-10.....	759.13	26.6	35.1	2	19.0	10	28.6	29.2
11-20.....	59.21	26.9	35.5	11	18.8	16	28.6	29.3
21-31.....	60.21	27.2	36.3	30	21.5	28	29.0	29.5

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	<i>Per cent</i>	<i>Per cent</i>		<i>Per cent</i>	
1-10.....	70.4	80.8	6	64.2	10
11-20.....	68.5	75.6	18	60.8	14
21-31.....	72.6	82.1	27	67.0	31

Date	Wind					Atmidometer : (open air)		
	Prevailing direction	Velocity			Total	Daily maxi- mum	Day	
		Total	Daily total maxi- mum	Day				
1-10.....	SE	<i>Kms.</i> 2,012.0	<i>Kms.</i> 263.5	8	<i>mm.</i> 57.7	<i>mm.</i> 7.2	2	
11-20.....	SE	2,110.5	252.0	14	65.5	9.4	14	
21-31.....	E quad	1,854.5	210.5	31	56.0	6.9	30	

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	<i>h. m.</i>	<i>h. m.</i>		<i>mm.</i>	
1-10.....	65 10	9 15	4	10.1	2
11-20.....	72 10	9 20	15	0.0	0
21-31.....	42 05	9 05	30	2.8	3

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	10	4	14	26.63
Filipinos.....	725	624	1,349	54.04
Spaniards.....	4	2	6	36.16
Other Europeans.....	1	1	2	20.93
Chinese.....	35	40	75	49.49
All others.....	5	1	6	32.34
Total and average.....	780	672	1,452	53.39

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MARIKINA:</b>							
1. Tondo.....	215	191	406	11	12	23	429
2. San Nicolas.....	44	41	85	3	4	7	92
3. Binondo.....	28	21	49	1	1	2	51
Total.....	287	253	540	15	17	32	572
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	69	68	137	6	4	10	147
5. Quiapo.....	19	27	46	2	1	3	49
6. San Miguel.....	4	4	8				8
7. Sampaloc.....	146	106	252	8	8	16	268
Total.....	238	205	443	16	13	29	472
<b>No. III, PACO:</b>							
8. Port Area.....	1		1				1
9. Intramuros.....	31	31	62	1	3	4	66
10. Ermita.....	46	33	79	1	3	4	83
11. Malate.....	60	55	115	3	5	8	123
12. Paco.....	31	26	57		1	1	58
13. Pandacan.....	14	10	24	3		3	27
14. Santa Ana.....	30	15	45	3	2	5	50
Total.....	213	170	383	11	14	25	408
Grand total.....	738	628	1,366	42	44	86	1,452

Attended by physicians, living, 417; stillbirths, 27.

Attended by midwives, living, 120; stillbirths, ....

Attended by families, living, 915; stillbirths, 13.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA

## BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rate, per 1,000
Americans.....	2	2	4	15.04
Filipinos.....	341	324	665	26.64
Spaniards.....	2	1	3	18.08
Other Europeans.....	1		1	10.46
Chinese.....	16	5	21	13.86
All others.....				
Total and average.....	362	332	694	25.52

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA  
BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MANILA:</b>			
1. Tondo.....	112	100	212
2. San Nicolas.....	27	25	52
3. Binondo.....	15	6	21
<b>Total.....</b>	<b>154</b>	<b>131</b>	<b>285</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	62	50	112
5. Quiapo.....	11	13	24
6. San Miguel.....	6	5	11
7. Sampaloc.....	63	63	126
<b>Total.....</b>	<b>142</b>	<b>131</b>	<b>273</b>
<b>No. III, PACO:</b>			
8. Port Area.....			
9. Intramuros.....	10	11	21
10. Ermita.....	10	8	18
11. Malate.....	22	25	47
12. Paco.....	18	11	29
13. Pandacan.....	5	9	14
14. Santa Ana.....	1	6	7
<b>Total.....</b>	<b>66</b>	<b>70</b>	<b>136</b>
<b>Grand total.....</b>	<b>362</b>	<b>332</b>	<b>694</b>

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	147	107
Divorced.....		
Widowed.....	20	58
Single.....	252	222
Conditions not stated.....	3	
<b>Total.....</b>	<b>422</b>	<b>387</b>
<b>Grand total.....</b>	<b>809</b>	

Stillbirths.....	40
Number of deaths with medical attendance.....	589
Number of deaths without medical attendance.....	220



## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year	92	78	4	15	189
1 year plus	38	37	4	5	84
2 years plus	13	20	2	1	36
3 years plus	8	12	1	1	22
4 years plus	7	5		1	13
5 to 9 years	13	9	3	1	26
10 to 14 years	5	8	3	2	18
15 to 19 years	12	9	6	3	30
20 to 24 years	17	11	5	2	35
25 to 29 years	20	21	4	11	56
30 to 34 years	13	8	6	1	28
35 to 39 years	15	13	3	4	35
40 to 44 years	13	14	2	2	31
45 to 49 years	19	14	6	3	42
50 to 54 years	11	11	3		25
55 to 59 years	13	10			23
60 to 64 years	14	10	3	1	28
65 to 69 years	9	7	2	1	19
70 to 74 years	13	8	2		23
75 to 79 years	8	7		1	16
80 to 84 years	5	3			8
85 to 89 years	1	3	1		5
90 to 94 years	2	8			10
95 to 99 years	1	3			4
100 years and over		3			3
Age not stated					
Total	362	332	60	55	809









## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													3
	a. Typhoid fever.....			1						2				2
7	Measles.....						2							2
10	Diphtheria.....						1							1
16	Dysentery:													1
	a. Amebic.....						1							1
	b. Bacillary.....			1										1
	c. Unspecified or due to other causes.....						1							1
21	Erysipelas.....			1										1
27	Anthrax.....			1										1
31	Tuberculosis of the respiratory system.....			8			7					1		18
32	Tuberculosis of the meninges and central nervous system.....			2						2				2
33	Tuberculosis of the intestines and peritoneum.....						1							1
43-69	<i>II. General diseases not included in Class I</i>													
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....			1										1
55	Beriberi:													5
	a. Infants.....			2			3							1
57	Diabetes mellitus.....													1
60	Diseases of the thyroid gland:	1												1
	b. Other diseases of the thyroid gland.....						1							1
65	Leukemia and Hodgkin's disease:													
	a. Leukemia.....			1								1		1
70-86	<i>III. Diseases of the nervous system and of the organs of special sense</i>													
71	Meningitis:													4
	a. Simple meningitis.....			1			3							
74	Cerebral hemorrhage, apoplexy:													2
	a. Cerebral hemorrhage.....			1						1				
86	Diseases of the ear and of the mastoid process:													1
	a. Diseases of the ear.....						1							1

11. Diseases of the circulatory system

87-96

90	Other diseases of the heart.....	3	3	3
91	Diseases of the arteries:			
	a. Arteriosclerosis.....	1	1	3

V. Diseases of the respiratory system

97-107	Bronchitis:			
99	a. Acute.....	1	2	3
	b. Chronic.....		1	1
100	Bronchopneumonia:			
	a. Bronchopneumonia.....	6	10	16
	b. Capillary bronchitis.....		1	1
101	Pneumonia:			
	a. Lobar.....	3		3
102	Pleurisy.....		1	1

VI. Diseases of the digestive system

108-127	Ulcer of the stomach and duodenum:			
111	a. Ulcer of the stomach.....	1		1
113	Diarrhea and enteritis (under 2 years of age).....	1	2	3
114	Diarrhea and enteritis (2 years and over).....	1		1
116	Diseases due to other intestinal parasites:			
	c. Nematodes (other than ancylostoma).....	1		1
117	Appendicitis and typhlitis.....	2		1
124	Other diseases of the liver.....	1		1

VII. Nonvenereal diseases of the genito-urinary system and annexa

128-142	Acute nephritis (including unspecified under 10 years of age).....		1	1
129	Chronic nephritis (including unspecified 10 years and over).....	3		3
131	Other diseases of the kidneys and annexa.....	1		1
138	Salpingitis and pelvic abscess (female).....		1	1
139	Benign tumors of the uterus.....		2	2

VIII. The puerperal state

143-150	Accidents of pregnancy:			
143	b. Ectopic gestation.....	1		1
144	Puerperal hemorrhage.....	1		1
145	Other accidents of labor:			
	c. Others under this title.....	2		2
146	Puerperal septicemia.....	1		1
148	Puerperal albuminuria and convulsions.....		3	3

## NUMBER OF DEATHS BY CAUSES NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>													
151	Gangrene.....				1									1
153	Acute abscess.....			2										2
155-158	<i>X. Diseases of the bones and of the organs of locomotion</i>													
155	Diseases of the bones (tuberculosis excepted).....			1										1
164-	<i>XIII. Old age</i>													
164	Senility.....				1									1
165-203	<i>XIV. External causes</i>													
185	Accidental traumatism by fall.....			2										2
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	a. Railroad accidents.....			1										1
	c. Automobile accidents.....			1	2									3
198	Homicide by cutting or piercing instruments.....			1										1
	Total.....	2		52	55					5		1		115
	Grand total.....	2		107						5		1		115



## INFANT MORTALITY

Causes of death	Under 24 hours	24 hours to under 36 hours	36 hours to under 48 hours	48 hours to under 14 days	14 days to under 1 year	Total
7. Measles					1	1
11. Influenza:						
a. With pulmonary complication specified					1	1
21. Erysipelas					2	2
29. Tetanus:						
a. Umbilical				3	1	4
32. Tuberculosis of the meninges and central nervous system					2	2
55. Beriberi				1	30	31
70. Encephalitis					1	1
71. Meningitis:						
a. Simple meningitis					3	3
80. Infantile convulsions					1	1
99. Bronchitis:						
a. Acute					20	20
b. Chronic					7	7
100. Broncho-pneumonia:						
a. Broncho-pneumonia					37	37
b. Capillary bronchitis					2	2
101. Pneumonia:						
a. Lobar					2	2
102. Pleurisy					1	1
113. Diarrhea and enteritis					16	16
126. Peritonitis without specified cause				1		1
128. Acute nephritis					3	3
129. Chronic nephritis					2	2
153. Acute abscess					1	1
154. Other diseases of the skin and annexe					2	2
159. Congenital malformations (stillbirths not included):						
b. Congenital malformations of the heart				1		1
c. Others under this little				1		1
160. Congenital debility, icterus, and sclerosis	5	3		10	10	28
161. Premature birth; injury at birth:						
a. Premature birth (not stillborn)	4	3			1	8
b. Injury at birth (not stillborn)	2					2
162. Other diseases peculiar to early infancy	5	1		2		8
179. Accidental burns (conflagration excepted)					1	1
Total	16	7		19	147	189

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set	21,182
Number of rats caught by spring traps	3,060
Number of cage wire traps set	665
Number of rats caught by cage wire traps	0
Number and kind of baits (coconuts)	22,512
Number of poison portions placed	28,104
Number of rats found poisoned	290
Number of rats killed by clubs and other weapons	991
Number of rats found dead from other causes	541
Total number of rats otherwise caught, found dead, or killed	4,882
Total number of rats sent to the laboratory for examination	4,882
Total number of rats found positive for plague	0

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF MARCH, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total			
	Male		Female		Male		Female		Male		Female		Cases	Deaths		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths				
I.	No. 1.	6	2	2			1	1	2	2	6	2	4	2	10	4
	No. 2.										1	1			1	1
	No. 3.															
	No. 4.	3		2					1	1	3		3	1	6	1
II.	No. 5.															
	No. 6.	2									2				2	2
	No. 7.	5	1	1	1	1			2		6	1	3	1	9	2
	No. 8.															
III.	No. 9.	3									3				3	
	No. 10.															
	No. 11.	1		2							1		2		3	
	No. 12.															
	No. 13.			1									1		1	
	No. 14.	1		1							1		1		2	
Grand total	21	3	9	1	2	1	5	3	23	4	14	4	37	8		

**REMARKS:**

Cases confirmed as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Typhoid carrier—None.

35

2

0

1

14

0

0

22

21

8

DYSENTERIES REPORTED DURING THE MONTH OF MARCH, 1927, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths	Cases	Cases	Deaths	Cases	Cases	Deaths	Cases	Cases	Deaths	Cases	Cases	Deaths	Cases	Cases	Deaths	Cases	Cases	Deaths
I.....	No. 1.....	1	1													3	3	3	3	3
	No. 2.....																		1	1
	No. 3.....																		1	1
	No. 4.....																			
	No. 5.....																			
II.....	No. 6.....																			
	No. 7.....			1	1															
	No. 8.....																			
	No. 9.....																			
	No. 10.....																			
	No. 11.....																			
	No. 12.....																			
	No. 13.....																			
	No. 14.....																			
	Grand total.....	1	1	1	1		4	2	2	8	7		5	3	9	8		14	11	

## REMARKS:

Amoebic dysentery.....

Bacillary dysentery.....

Unspecified.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Dysentery carrier—3.

## CHOLERA REPORTED DURING THE MONTH OF MARCH, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female			Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths			
I.	No. 1.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 2.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 3.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 4.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
II.	No. 5.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 6.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 7.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 8.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 9.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 10.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
III.	No. 11.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 12.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 13.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 14.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	Grand total	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....

## REMARKS:

No nonresident case was reported during the month.

Cholera carrier—4.

# DIPHTHERIA REPORTED DURING THE MONTH OF MARCH, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female			Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths			
I. ...	No. 1.	1		1									1			1			2	
No. 2.	1												1						1	
No. 3.	1																			
No. 4.																				
No. 5.																				
No. 6.																				
No. 7.				1												1			1	
No. 8.																				
No. 9.																				
No. 10.	1			1									1			1			2	
No. 11.	1			1									1			1			2	
No. 12.																				
No. 13.																				
No. 14.																				
Grand total.	4			4									4			4			8	

## REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—None.

3

1

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF MARCH, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	24	3	3	2
Varicella.....	38	25		
Varioloid.....				
Smallpox.....				
Measles.....	29	30	7	
Whooping cough.....		1		1
Influenza.....	16	7	2	1
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....		1		
Tuberculosis of the respiratory organs.....	180	208	77	77
Tuberculosis of other organs.....	11	11	11	10
Beriberi, infantile.....	19	8	19	7
Beriberi, adult.....	2	2	2	

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	36	28		
Varicella.....	12	1		
Varioloid.....				
Smallpox.....				
Measles.....	3	4		2
Whooping cough.....				
Influenza.....	4	2		
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	44	31	11	7
Tuberculosis of other organs.....	3	1	2	1
Beriberi, infantile.....	3	3	2	3
Beriberi, adult.....	1			

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF MARCH, 1927**

Sera and vaccines	On hand March 1, 1927	Received during the month	Total to be accounted for	Distrib- uted during the month	Remaining at the end of the month
Antidiphtheric serum (units).....	740,000		740,000	270,000	470,000
Antidysenteric serum (ampoules).....	74	300	374	183	191
Antitetanic serum (units).....	800,000	41,000	841,000	241,000	600,000
Cholera vaccine (c.c.).....	26,600	176,880	203,480	113,400	90,080
Dried vaccine virus (units).....	92,600	100,000	192,600	98,400	94,200
Fresh vaccine virus (units).....	249,100	200,000	449,100	189,300	259,800
Gonococcus vaccine (ampoules).....		124	124	124	
Mixed typhoid-cholera vaccine (c.c.).....	43,100	283,300	326,400	245,880	80,520
Normal horse serum (ampoules).....		62	62	62	
Streptococcus vaccine (ampoules).....					
Typhoid vaccine (c.c.).....	2,940	48,000	50,940	34,320	16,620

# REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF MARCH, 1927

171

Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated								
		Total vaccinations	Previously vaccinated		Under 1 year	1 to 4 years		5 years and over		Total			
			Never	Successful		Unsuccessful	Positive	Negative	Positive		Negative		
No. 1.	Tondo.....	3,584	318	2,136	1,130	330	8	25	13	722	1,388	1,077	1,409
	San Nicolas.....	72	67	5	7	76	11	8	2	84	2	2	
	Binondo.....	196	187	2	7	118	11	6	1	124	12	12	
	Santa Cruz.....	5,516	238	3,949	1,329	183	10	44	9	1,924	2,349	2,151	2,368
	Quiapo.....	154	146	2	6	50	2	2	1	52	30	30	
No. 2.	San Miguel.....	86	79	4	3	29	7	1	2	117	115	351	124
	Sampaloc.....	459	199	114	146	209	7	25	2	351	30	124	124
	Port Area.....	135	123	12	12	57	5	1	1	58	5	5	5
	Intramuros.....	97	89	8	8	129	9	1	2	130	9	9	9
	Ermita.....	173	83	76	14	113	3	1	2	114	5	5	5
No. 3.	Malate.....	582	124	449	9	44	10	14	8	32	76	90	94
	Paco.....	48	39	9	9	35	8	1	1	36	8	8	8
	Pandacan.....	37	37	0	0	29	1	1	1	29	1	1	1
	Santa Ana.....	11,139	1,729	6,732	2,678	1,402	72	127	37	2,797	3,928	4,326	4,037
	Total.....	11,139	1,729	6,732	2,678	1,402	72	127	37	2,797	3,928	4,326	4,037

## Vaccine virus:

Received.....	24,100
Used.....	15,450
Remained.....	8,650

ANTI-TYPHOID AND ANTI-CHOLERA VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF MARCH, 1927<sup>1</sup>

Health districts	Municipal districts	Number of injections made in—												Total number of injections					
		Adults						Children						First		Second		Third	
		First injections		Second injections		Third injections		First injections		Second injections		Third injections							
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.		
No. 1.....	{Tondo.....	.....	3,092	.....	2,026	.....	1,247	42	871	38	631	11	483	42	3,963	38	2,637	11	1,730
	{San Nicolas.....	1	1,378	.....	1,170	.....	685	4	346	1	236	1	156	5	1,724	1	1,466	1	841
	{Binondo.....	.....	299	.....	261	.....	139	.....	77	.....	39	4	42	.....	376	.....	300	4	181
No. 2.....	{Santa Cruz.....	.....	1,922	1	1,325	.....	971	14	977	.....	698	4	531	14	2,899	1	2,023	4	1,502
	{Quiapo.....	.....	785	.....	528	.....	524	.....	230	.....	235	.....	281	.....	1,015	.....	763	.....	805
	{San Miguel.....	.....	222	.....	161	.....	598	.....	219	.....	841	.....	1,008	.....	441	.....	1,002	.....	1,606
	{Sampaloc.....	.....	1,228	.....	855	.....	571	.....	2,256	.....	2,026	.....	1,039	.....	3,484	.....	2,881	.....	1,610
No. 3.....	{Port Area.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	{Intramuros.....	.....	1,098	.....	852	.....	435	6	457	5	395	3	194	6	1,555	5	1,247	3	629
	{Ermita.....	.....	1,876	.....	817	.....	311	.....	146	.....	21	.....	76	.....	2,022	.....	838	.....	387
	{Malate.....	.....	36	.....	30	.....	21	1	20	1	20	.....	11	1	56	1	50	.....	32
	{Paco.....	.....	528	.....	538	.....	397	.....	343	.....	415	.....	263	.....	871	.....	953	.....	660
	{Pandacan.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	{Santa Ana.....	.....	376	.....	266	.....	163	.....	257	.....	227	.....	124	.....	633	.....	493	.....	287
	Total.....	1	12,840	1	8,829	.....	6,062	67	6,199	45	5,844	23	4,208	68	19,039	46	14,673	23	10,270

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

V., in persons never vaccinated before; R., revaccinations.



## ANTI-DYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF MARCH 1927

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.	Tondo.....	16	7	5	4	21	11
	San Nicolas.....	2	.....	.....	.....	2	.....
	Binondo.....	2	.....	1	.....	3	.....
No. 2.	Santa Cruz.....	11	9	2	3	13	12
	Quiapo.....	.....	.....	.....	.....	.....	.....
	San Miguel.....	.....	.....	.....	.....	.....	.....
	Sampaloc.....	20	14	8	7	28	21
	Port Area.....	8	.....	.....	.....	8	.....
No. 3.	Intramuros.....	.....	.....	.....	.....	.....	.....
	Ermita.....	5	2	5	4	10	6
	Malate.....	1	.....	.....	.....	1	.....
	Paco.....	.....	.....	.....	.....	.....	.....
	Pandacan.....	.....	.....	.....	.....	.....	.....
	Santa Ana.....	.....	.....	.....	.....	.....	.....
	Total.....	65	32	21	18	86	50

**CONSOLIDATED REPORT OF ANTI-SMALLPOX VACCINATION RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Total vaccinations	Vaccinations		
		Previously vaccinated		
		Never	Successfully	Unsuccessfully
Abra.....	2,168	455	594	1,119
Agusan.....	805	218	170	417
Albay.....	13,558	2,827	1,923	8,808
Antique.....	1,910	522	879	509
Bataan.....	2,497	835	772	890
Batanes.....	172	24	6	142
Batangas.....	11,284	3,873	1,881	5,530
Bohol.....	4,224	1,255	1,319	1,650
Bukidnon.....	1,302	355	260	687
Bulacan.....	5,225	1,940	1,647	1,638
Cagayan.....	5,934	1,791	1,275	2,868
Camarines Norte.....	7,698	1,202	4,409	2,087
Camarines Sur.....	6,995	1,537	2,328	3,130
Capiz.....	4,709	1,328	1,637	1,744
Catanduanes.....	2,791	656	753	1,382
Cavite.....	5,371	1,121	2,285	1,965
Cebu.....	16,001	4,816	3,055	8,130
Cotabato.....	1,976	584	656	736
Davao.....	8,567	2,813	3,629	2,125
Ilocos Norte.....	4,221	957	1,332	1,932
Ilocos Sur.....	2,795	712	347	1,736
Iloilo.....	20,322	4,208	14,298	1,816
Isabela.....	18,961	4,676	11,434	2,851
Laguna.....	7,066	1,525	3,241	2,300
Lanao.....	13,303	3,024	8,117	2,162
La Union.....	5,363	1,119	177	4,067
Leyte.....	10,425	3,053	1,869	5,503
Marinduque.....	17,760	1,329	12,897	3,534
Masbate.....	1,262	511	203	548
Mindoro.....	715	188	200	327
Misamis.....	2,107	454	494	1,159
Mountain Province.....	5,165	676	4,063	426
Nueva Ecija.....	7,333	2,815	1,571	2,947
Nueva Vizcaya.....	833	315	58	460
Occidental Negros.....	28,829	9,912	12,558	6,359
Oriental Negros.....	4,353	1,296	1,491	1,566
Pampanga.....	7,898	1,981	3,355	2,562
Pangasinan.....	11,881	4,379	1,450	6,052
Rizal.....	34,026	5,255	27,691	1,080
Romblon.....	13,563	2,673	2,761	8,129
Samar.....	7,910	1,557	2,493	3,860
Sorsogon.....	3,367	1,587	135	1,645
Sulu.....	1,565	816	166	583
Surigao.....	899	463	78	358
Tarlac.....	4,793	1,172	2,648	973
Tayabas.....	8,663	3,543	1,484	3,636
Zambales.....	2,084	786	317	981
Zamboanga.....	2,512	721	400	1,391
Total.....	353,161	89,855	146,806	116,500

<sup>1</sup> Incomplete; reports from other provinces not yet received.

NOTE.—Vaccinations performed by the vaccinating parties are included in the table.

**CONSOLIDATED REPORTS OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive
Abra.....	159	96	364	343	371	638	894	1,077
Agusan.....	23	24	46	27	122	52	191	103
Albay.....	1,262	481	1,502	436	2,421	946	5,185	1,813
Antique.....	147	59	253	219	181	208	581	486
Bataan.....	549	94	711	263	576	132	1,836	489
Batanes.....	20	14	18	17	26	36	64	67
Batangas.....	1,765	612	2,224	949	1,975	1,509	5,964	3,070
Bohol.....	502	149	757	344	1,042	965	2,301	1,458
Bukidnon.....	34	30	119	91	323	537	476	658
Bulacan.....	1,395	322	897	419	818	519	3,110	1,260
Cagayan.....	854	175	1,278	264	1,919	1,081	4,051	1,520
Camarines Norte.....	528	89	908	197	2,417	1,236	3,853	1,522
Camarines Sur.....	1,044	396	888	397	2,250	1,485	4,182	2,278
Capiz.....	427	108	541	182	1,661	579	2,629	869
Catanduanes.....	318	160	331	187	395	215	1,044	562
Cavite.....	1,055	121	906	265	1,946	1,070	3,907	1,456
Cebu.....	1,252	471	1,250	350	1,529	1,389	4,031	2,210
Cotabato.....	24	19	107	116	404	263	535	398
Davao.....	122	38	631	193	3,192	1,305	3,945	1,536
Ilocos Norte.....	494	223	844	328	855	1,047	2,193	1,598
Ilocos Sur.....	315	99	338	124	466	604	1,119	827
Iloilo.....	646	99	1,517	698	4,443	5,378	6,606	6,175
Isabela.....	752	311	1,994	487	5,268	4,692	8,014	5,490
Laguna.....	850	115	847	333	2,040	1,949	3,737	2,397
Lanao.....	204	28	828	240	3,179	1,867	4,211	2,135
La Union.....	638	173	718	561	558	853	1,914	1,587
Leyte.....	400	165	1,200	450	2,353	1,069	3,953	1,684
Marinduque.....	297	55	902	244	5,827	2,899	7,026	3,198
Masbate.....	142	57	185	81	323	142	650	280
Mindoro.....	149	63	36	17	246	141	481	221
Misamis.....	85	28	266	95	477	310	828	433
Mountain Province.....	268	27	1,190	210	2,663	2,084	4,121	2,321
Nueva Ecija.....	1,297	314	1,747	666	1,194	1,202	4,238	2,182
Nueva Vizcaya.....	156	88	54	91	123	261	333	440
Occidental Negros.....	1,591	298	2,648	595	4,929	3,457	9,168	4,350
Oriental Negros.....	552	161	427	205	1,307	596	2,286	962
Pampanga.....	814	163	758	203	1,543	1,485	3,115	1,851
Pangasinan.....	2,111	433	2,692	873	2,061	1,679	6,864	2,985
Rizal.....	1,663	248	3,347	1,116	7,302	12,245	12,312	13,609
Romblon.....	359	71	1,795	534	5,320	4,850	7,474	5,455
Samar.....	382	179	732	499	1,241	1,102	2,355	1,780
Sorsogon.....	384	172	639	298	888	512	1,911	982
Sulu.....	83	37	226	83	532	242	841	362
Surigao.....	115	46	201	57	236	154	552	257
Tarlac.....	529	183	902	529	1,012	1,541	2,443	2,253
Tayabas.....	1,342	204	2,128	403	2,961	1,107	6,431	1,714
Zambales.....	476	142	428	270	225	445	1,129	857
Zamboanga.....	139	241	225	537	256	866	620	1,644
<b>Total.....</b>	<b>28,713</b>	<b>7,831</b>	<b>43,545</b>	<b>16,086</b>	<b>83,396</b>	<b>68,944</b>	<b>155,654</b>	<b>92,861</b>

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-CHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay .....	9,627	3,632		13,259
Antique .....	4,190	2,677		6,867
Bataan .....	1,567			1,567
Batangas .....	3,750			3,750
Bulacan .....	16,883	1		16,884
Camarines Norte .....	1,841	10		1,851
Camarines Sur .....	2,592			2,592
Capiz .....	5,153	410		5,563
Catanduanes .....	102			102
Cavite .....	336			336
Cebu .....	57			57
Ilocos Norte .....	44			44
Iloilo .....	15,038	2,769		17,807
Laguna .....	135	10		145
Leyte .....	1,186	242		1,428
Pampanga .....	31,564	4,475		36,039
Pangasinan .....	2,835	1,614		4,449
Rizal .....	3,990	875		4,865
Romblon .....	448			448
Sorsogon .....	1,378	90		1,468
Tarlac .....	2,591	388		2,979
Total .....	105,307	16,693		122,000

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-TYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Albay .....	58	43	4	105
Batangas .....	37	34	29	100
Bulacan .....	1,159	590	357	2,106
Catanduanes .....	7	6		13
Iloilo .....	1,955	919	357	3,231
Laguna .....	963	411	247	1,621
La Union .....	267	242	244	753
Pampanga .....	591	567	504	1,662
Pangasinan .....	1,301	1,037	783	3,121
Rizal .....	1,526	486	56	2,068
Samar .....	2			2
Total .....	7,866	4,335	2,581	14,782

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Agusan.....	3,618	194		3,812
Bataan.....	816	597		1,413
Batangas.....	894	191		1,085
Bulacan.....	1,011	369		1,380
Bohol.....	581	469		1,050
Cagayan.....	1,068	498		1,561
Camarines Norte.....	154	81		235
Camarines Sur.....	297	205		502
Cavite.....	3,664	2,360		6,024
Cebu.....	4,258	318		4,586
Cotabato.....	307			307
Davao.....	639	473		1,112
Ilocos Norte.....	23	86		109
Ilocos Sur.....	1,293	1,249		2,542
Iloilo.....	1,782	1,449		3,231
Isabela.....	19	18		37
Laguna.....	5			5
Lanao.....	511	69		580
La Union.....	1,908	1,462		3,370
Leyte.....	462	357		819
Masbate.....	660	225		885
Misamis.....	1,042	325		1,367
Nueva Ecija.....	230	170		400
Nueva Vizcaya.....	797	614		1,411
Occidental Negros.....	16,489	8,125		24,614
Oriental Negros.....	1,972	1,311		3,283
Pampanga.....	8,587	6,182		14,769
Pangasinan.....	29			29
Rizal.....	21,691	11,654		33,345
Samar.....	549	125		674
Surigao.....	403	308		711
Tarlac.....	1,610	391		2,001
Tayabas.....	4,297	2,180		6,427
Zambales.....	1,260	1,180		2,440
Zamboanga.....	1,932	745		2,677
Total.....	84,868	43,925		128,793

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF MARCH, 1927**

(No case and no death reported during the month.)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF MARCH, 1927**

(No case and no death reported during the month.)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF MARCH, 1927**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, March 1, 1927:</b>				
Minor .....	125	189	70	384
Sewer .....	23	48	.....	71
Vacating .....	8	11	.....	19
Filling .....	10	35	18	63
<b>Total .....</b>	<b>166</b>	<b>283</b>	<b>88</b>	<b>537</b>
<b>Orders issued during the month:</b>				
Minor .....	16	12	3	31
Sewer .....	1	2	1	4
Vacating .....	.....	.....	.....	.....
Filling .....	.....	.....	.....	.....
<b>Total .....</b>	<b>17</b>	<b>14</b>	<b>4</b>	<b>35</b>
<b>Orders completed during the month:</b>				
Minor .....	10	36	8	54
Sewer .....	.....	1	.....	1
Vacating .....	.....	.....	.....	.....
Filling .....	1	.....	.....	1
<b>Total .....</b>	<b>11</b>	<b>37</b>	<b>8</b>	<b>56</b>
<b>Orders cancelled during the month:</b>				
Minor .....	.....	7	2	9
Sewer .....	.....	.....	.....	.....
Vacating .....	.....	.....	1	1
Filling .....	.....	.....	.....	.....
<b>Total .....</b>	<b>.....</b>	<b>7</b>	<b>3</b>	<b>10</b>
<b>Orders pending, March 31, 1927:</b>				
Minor .....	131	158	63	352
Sewer .....	24	49	1	74
Vacating .....	8	11	.....	19
Filling .....	9	35	17	61
<b>Total .....</b>	<b>172</b>	<b>253</b>	<b>81</b>	<b>506</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations .....	33	54	55	142
<b>Permits for minor building construction:</b>				
Approved .....	43	50	33	126
Disapproved .....	9	9	6	24
<b>New buildings completed .....</b>	<b>18</b>	<b>35</b>	<b>40</b>	<b>93</b>
<b>Permits for light and mixed material constructions:</b>				
Approved .....	13	42	15	70
Disapproved .....	6	4	7	17
<b>Prosecutions:</b>				
Convictions .....	1	1	1	3
Dismissals .....	2	22	.....	24
Amount of fines .....	P2.00	P10.00	.....	P12.00
<b>Plumbing permits issued .....</b>	<b>42</b>	<b>61</b>	<b>58</b>	<b>161</b>
<b>Plumbing projects completed .....</b>	<b>42</b>	<b>56</b>	<b>51</b>	<b>149</b>
<b>Premises connected to the sanitary sewer to February 28, 1927 .....</b>	<b>2,500</b>	<b>4,279</b>	<b>672</b>	<b>7,451</b>
<b>Connected during the month .....</b>	<b>6</b>	<b>9</b>	<b>11</b>	<b>26</b>
<b>Total .....</b>	<b>2,506</b>	<b>4,288</b>	<b>683</b>	<b>7,477</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

Vol. VII

APRIL, 1927

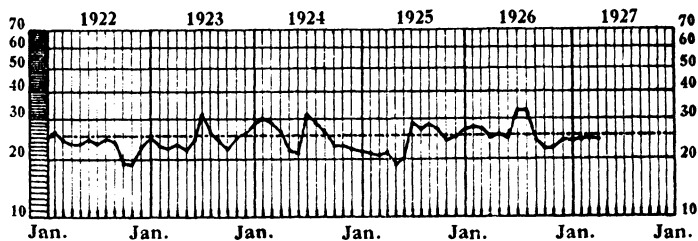
No. 4

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING

1927

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., Chairman

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Notes on Sanitation in Sugar Haciendas .....	181
History of Smallpox and Vaccination in the Philippines, by J. P. Bantug .....	192
The Objects and Activity of the Industrial Hygiene Section of the Philippine Health Service, by R. Villafranca.....	200
General Statistics .....	211
180	



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VII**

**APRIL, 1927**

**No. 4**

**NOTES ON SANITATION IN SUGAR HACIENDAS**

**I. INTRODUCTORY REMARKS**

Disease, as generally known, is expensive under all conditions and circumstances. From the economic standpoint and so far as it may affect the output of sugar haciendas, the importance of disease prevention cannot therefore be gainsaid.

A laborer falls ill; loses a certain number of working days; and for days, even after he gets well, his physical efficiency remains below par. Therein lies the economic value of disease prevention.

In one year's time, sugar hands lose ten working days from preventable disease, and a like period before they regain their full normal efficiency. A picul of sugar requires five-man days' work. Four piculs are therefore lost per laborer. At ₱15 per picul, a hacienda employing 100 laborers loses the equivalent of ₱6,000 a year, to say nothing of the cost of medicines and professional care, which averages ₱20 to one sick man,—an additional loss of ₱2,000,—and of the loss in wages—twenty working days—totalling ₱2,000 likewise at ₱1 per diem. In round numbers, then, sugar haciendas lose from preventable disease about ₱100 yearly for each laborer listed on the pay-rolls.

The above figures do not include, of course, the time spent and trouble caused to the caretakers of the sick.

**II. THE ESSENTIALS IN HACIENDA SANITATION**

The factors involved in maintaining health and sanitation in sugar estates are multitudinous. Some sort of classification should therefore be followed, which would enable us to gain

a clear and comprehensive idea of the scope and relative values of each. Under existing conditions, such factors can be grouped under two great fundamental heads, namely:

(a) Labor camps sanitation, including housing and its component problems, water supply, fecal disposal, garbage, offal and manure disposal, drainage and mosquito eradication.

(b) Hygiene and welfare work, including the consideration of personal habits, regular health examination of employees and laborers, instruction in hygienic living (health education), and the provision to laborers of healthful recreations and of medical relief,—treatment of common ailments and labor accidents in dispensaries, emergency hospitals and in a central hospital; health surveys and the institution of campaigns for the eradication of preventable diseases, such as hookworm and other intestinal parasites, malaria, tuberculosis, dysentery, and typhoid fever.

The consideration of these prime essentials follows:

#### *Labor Camps Sanitation*

Labor camps sanitation deals with matters of environment which affect the health of laborers. Housing, water supply, fecal disposal, garbage, offal and manure disposal shall be dealt under this head.

#### 1. HOUSING—SPECIFIC PROBLEMS—SUGGESTIONS AND RECOMMENDATIONS

A goodly number of the health problems encountered in sugar haciendas originate from the insanitary housing conditions obtaining therein.

Habitations are built for shelter, for protection from the elements, for privacy, and for convenience of carrying life's necessary and most cherished functions. Housing deals, thus, with conditions under which a laborer spends his existence and considers the periods of sleep, of eating, of working, of recreation and of rest and the conditions of ventilation, lighting, cleanliness, and the exposure of disease-infected rooms. In other words, housing considers the place where a man eats, the condition, quality and care of the food and water; the infestation by flies, mosquitoes, and other vermin, the cleanliness of the eating utensils, the size, condition and cleanliness of yards, the construction of laborers' homes, and their proper location on suitable sites, the condition of flooring, proper surface drainage, the avoidance of obnoxious odors, proper fecal disposal and the provision of a pure water supply. Such is the vast scope and meaning of housing as a complex health factor.

Measures calculated to improve health conditions must necessarily include a thorough survey of the housing conditions and consequent improvement of every component factor found at fault.

#### SPECIFIC PROBLEMS

In dealing with labor housing, the following specific points should be considered:

(a) Location of laborers' camp. Is laborers' camp laid out in accordance with a given plan? Is general drainage provided? Are stables, corrals, and pig pens built away from dwellings? Are community closets and recreation grounds and buildings provided?

(b) Materials used in construction; height and floor area of bed rooms, dining room, hall, and kitchen; conditions of lighting and ventilation; provision of toilet and bathroom.

(c) Condition and size of yards. Do they allow sufficient space for children's playground and for vegetable growing? Cleanliness of pig-sites and stables, existence of stagnant water and means for surface drainage should be noted in this connection.

(d) Provision of safe water supply; containers used; handling.

(e) Fecal disposal. System used. Possibilities of polluting nearby streams.

(f) Sanitary cultural standard of laborers. Cleanliness observed in laborers' homes. Kind and upkeep of cooking and eating utensils. Instruction on proper and sanitary maintenance of dwellings. Periodical health examination of employees. General health instruction.

(g) Are bathroom facilities provided? Kind of water used.

(h) Are married and single laborers provided separate housing accommodations?

(i) Provision for garbage and refuse collection and disposal; use of manure as fertilizer.

#### SUGGESTIONS AND RECOMMENDATIONS

(a) *Location and planning of labor camps and dwellings.*—So far as it is possible, sites located on high ground should always be preferred to insure free surface drainage and clear play of air. At any rate, in laying out a labor camp, houses, and other buildings should be so located and built that the ground floors will not be damp, the same being affected by selecting as a camp site either elevated locations, or locations over porous soil with water-table far beneath the surface, or upon a sloping, well-drainage surface. The location of recreation halls, playgrounds, community closets, stables, and corrals should have careful consideration in laying out the plan for a labor camp.

(b) *Structural features of dwellings.*—Minimum specifications for Laborers' Bungalows. (See appended plan).

1. Elevation of living floor over ground-floor—from ground to flooring—1 meter.

2. Height of partitions—distance from flooring to ceiling, 3.50 meters. Double walls should not be allowed.

3. Windows area should be one-fifth to one-tenth of the total area of room.

4. Height of doors, from 2 to 2.50 meters, width 0.70 to 1.20 meters.

5. Bedroom specifications for a four-adult room to be  $4 \times 4 \times 3.5$ , that is, 14 cubic meters for each adult, each room to have not less than one window of which shall open on a yard, street, alley, or patio, such room to lodge no more than four adults. Children under 10 years should be computed as one-half adult.

6. Openings should be provided over each door and for .30 meter above. The opening may be protected by wire screening or battens, the latter not to diminish the ventilating space by more than one-third.

7. The minimum clear space to be allowed for bath and water closet should be as followed: water closet,  $0.90 \times 1.30$ , shower bath,  $0.90 \times 1.30$ , bath-tub  $1.50 \times 1.80$ . Toilets and baths, wherever possible, should be confined to one section of the building and shall have concrete floors, and be well lighted and ventilated. In no case should they open into a kitchen.

8. Kitchen space should be provided for at the rate of 1.80 square meter for each living room.

9. Adjoining buildings or dwelling should have an alley way of not less than four meters from wall to wall or of one meter space at least clear from ground to sky.

10. *Building materials.*—Posts and framework of dwellings should be of strong materials. The initial expenditure may be large, but it is cheaper in the long run, on account of the durability gained thereby.

#### ROOFING, FLOORING, CEILING, AND PARTITIONS

Galvanized iron versus nipa and cogon grass; wooden floors against bamboo slats; wooden ceiling and partitions versus sawale sheets, are still mooted questions in so far as their acceptability on the part of the laborers used to live in nipa huts is concerned. Undoubtedly, nipa and bamboo do have a few good points. There is no question, however, as to the preferability in favor of galvanized iron and wood in point of durability and resistance to fire. Living rooms not less than 3.50 meters high can be made comfortably cool, even with iron roofing, provided, sufficient windows and doors open into them, to allow sufficient ventilation and cooling ceilings such as sawale are used. As a concession to native preferences, sawale sheeting made of seasoned bamboo could be used for partitions and ceilings as well as tangili flooring in slats, 0.025 thick by 0.050 wide, in lieu of bamboo slats, laid down at 0.06 intervals.

## YARDS

A well-kept backyard is a necessity in all homes. The size, condition, cleanliness, and use of the backyards exercise decisive influence in the development of healthy children, in home economics and in the social outlook of laborers. The minimum backyard space should be not less than four square meters for each living room.

Bungalows built on above specifications should prove satisfactory to all concerned.

## 2. WATER SUPPLY

It is an established fact that a number of diseases, particularly dysentery, cholera, and typhoid, can be and is often conveyed through an impure water supply. Good potable water therefore is a most important factor in the protection of the health of laborers and other hacienda employees.

Whenever possible, piped artesian water should be made available in labor camps and dwellings. Most of the sugar haciendas in Negros can easily provide this commodity. Gravity systems, rain water, and superficial wells properly protected and provided with pumps may with advantage supplant artesian wells.

## 3. FECAL OR SEWAGE DISPOSAL

The so-called filth-borne diseases—dysentery, cholera, typhoid, hookworm, and other intestinal parasites—are spread largely through excreta, the transmission being effected, either through direct contact or through contamination of food and water.

Excreta, sewage or feces, improperly disposed of is a grave menace to health.

The Antipolo closet devised by the Philippine Health Service, in the absence of a more effective system of fecal disposal, should prove of immense benefit to labor camps because of its many good points. It is equally efficient in private homes or when adopted for community toilets. Plans and specifications are appended herewith.

## 5. GARBAGE, OFFAL AND MANURE DISPOSAL

This class of domestic wastes have little direct bearing on health, except as they afford a breeding place for flies. Their disposal is chiefly a question of preventing such wastes to become a nuisance by the offensive odors arising from them and relates chiefly to the promotion of camp cleanliness and decency.

Aside of the above considerations, they can be put to practical use, if properly collected, as fertilizers by burial or plowing into the ground.

Stables should be located on the leeward side of dwellings. Manure and all stable refuse, offal and garbage should be regularly collected and disposed of in the manner stated above or else burned. Dwellings and stables should therefore be provided with properly covered receptacles and the inmates and caretakers charged with the responsibility of their proper upkeep and use. With such care these domestic wastes cannot endanger health.

## 6. DRAINAGE AND MOSQUITO ERADICATION

Malaria quite prevalent in sugar haciendas and it is the biggest single cause of death amongst laborers. Yet, it is a preventable disease. The provision of proper drainage to labor camps and dwellings as a means of doing away with mosquito breeding places is of paramount importance in malaria eradication, aside of its value in rendering camp sites dry. The appended pamphlets will serve to throw additional light in this regard.

### *Hygiene and Welfare Work*

Matters relating to the individual laborers themselves, that is, to personal actions and habits, which have to do with health; instructions on correct living; regular health examination of laborers; and provision of healthy recreations and of medical relief are included in this head.

Naturally, man can never be separated from his environment, nor can hygiene and sanitation ever be separated. We have simply created artificial frontiers in this little paper to delineate the field of sanitary engineering (sanitation) from that of the physician who deals in human lives and of the social worker who thinks in terms of human welfare (hygiene). In the last analysis, hygiene and sanitation form one solid alliance of science and art, the science of hygiene and the art of sanitation, the combined practice of which seeks the preservation of individual health, the protection of public health against preventable disease, and the promotion of the physical efficiency of the Nation at large.

## 1. PROMOTION OF SANITARY CULTURAL STANDARD

Personal hygiene, health inspection and health instruction are included under this head. These are overlapped subjects. The knowledge of taking care of the body—care of the skin, pro-

tection against the elements, proper feeding, ventilation, work, exercise and rest, etc.,—which constitute personal hygiene and that phase of public health work concerned in imparting health instruction—health instruction and examination—are necessarily dependent on each other, the former on the latter to be exact.

In groups of population of low cultural attainments, such as those embodied by a large proportion of the laborers found in sugar estates, these phases of health work are unquestionably of the greatest import. We can provide our industrial hands with sanitary houses and every health commodity within financial reach of the owners, yet, slum and shocking habits and conditions will continue existing, were we to neglect raising the sanitary cultural standard of these laborers. A fountain can raise no higher than its head. The gospel of health and right living will have to be preached to them with patience and tact and sympathetic understanding of their shortcomings and possibilities.

## 2. HEALTHY RECREATION FOR LABORERS

“All work and no play makes Jack a dull boy.” Still, an excess of play may result in graver after-results. The necessity for providing healthy and properly supervised recreations to laborers becomes thereby manifest. That such recreations and other phases of welfare work have a direct bearing on the health and contentment of employees seems likewise manifest. Large industrial concerns abroad have come to realize what social welfare work can do in indirectly promoting the interests of their respective enterprises. Churches and schools, club houses and amusement halls, baseball grounds, swimming pools, tennis courts, even golf links, how therefore been erected and equipped for the edification, benefit and entertainment of employees. Expenditures in this regard are more than justified by the bettered body and mind of laborers and the increased economic output resulting therefrom.

Our laborers need such sorts of recreation just as bad. Such inversions as chapels wherein they can say their devotional prayers of Sundays and hear an occasional mass; stadiums and baseball grounds for Saturday evening boxing meets and Sunday afternoon ball games in lieu of cock-fights; swimming pools and baths; and a combined club house, meeting place and amusement hall for sundry social ends will, indeed, go a very long way toward promoting their happiness and health.

### 3. MEDICAL RELIEF

The necessity for the provision of adequate clinical and surgical attention to hacienda employees is well understood and we need not dwell long on the subject. Suffice to say that it is a bounden duty on hacienda owners to see to it that expert medical relief is given to sick laborers at all times, at the proper place of treatment—home, dispensary or hospital—without unnecessary delay.

The treatment of common laborers' diseases and accidents; eradication of malaria, hookworm and other parasites; campaigns against social diseases—tuberculosis, venereal affections, etc.—and health surveys are proper subjects of this head.

### III. ORGANIZATION AND FINANCES

[Suggestions and recommendations]

1. An efficient organization and sufficient funds for administrative expenses are absolutely required to carry out the essentials of sanitation outlined above.

2. To be thoroughly successful, the organization and its financing should be established on coöperative, systematized basis.

3. The Sugar Planters' Association should reach a covenant whereby each hacienda shall agree to the payment of a proportional contribution to a common health fund to pay for the administrative expenses of the health organization established in accordance with paragraph 2, the same to be denominated for legal and other purposes as the "Haciendas United Health Service," or any other suitable name, the basis for computing contributions to be laid as provided below.

4. The individual contributions of haciendas to the common health fund should be computed, paid, kept, expended, and audited as follows:

(a) At the end of each month, each hacienda shall pay ₱0.05 per diem for each employee and laborer employed during the month and for each member of the family dependent upon each employee or laborer for support and shall turn over the total amount accruing thereby to the treasurer of the Sugar Planters' Association.

(b) The treasurer of the Sugar Planters' Association shall act as the disbursing agent of the Hacienda United Health Service, and shall be responsible for the safety and proper disbursement of the common health fund, provided that he may collect as compensation as such disbursing agent 8 per cent of the total collections of each month.

(c) The treasurer of the Sugar Planters' Association should keep such books as may be necessary for the proper accounting of the common health



fund, provided that after the payment of all obligations for a given month, all balances shall be deposited at a bank and credited to the Haciendas United Health Service.

(d) The common health fund should be used for the payment of the following:

1. Salaries of the medical and subordinate personnel of the Haciendas United Health Service.
2. Purchase of equipments and supplies for dispensaries and emergency hospitals under the Haciendas United Health Service.
3. Operating expenses of dispensaries and emergency hospitals under the Haciendas United Health Service.
4. Necessary travel expenses and quarters allowance of the medical and subordinate personnel.

*Provided*, That balances accruing at the end of each year shall be accumulated for the purpose of establishing hospital and dispensary buildings, amusement halls, community comfort stations, community baths and swimming pools and other permanent improvement designed for the welfare of hacienda employees and laborers, the Board of Directors of the Sugar Planters' Association of Negroes to decide where and which shall be created.

(e) The auditing of the accounts of the Haciendas United Health Service and revision of the account books of the haciendas included therein for the purpose of verifying the correctness of their contributions shall be performed by an auditor appointed by the Board of Directors of the Sugar Planters' Association.

5. The personnel of the Haciendas United Health Service should be as follows:

*Headquarters staff.*—(a) One Director at ₱6,000 per annum. To exercise general control and supervision over the hygienic and sanitation work in the haciendas included in the organization of the Haciendas United Health Service.

(b) One Deputy Director at ₱5,000 per annum. To be in charge of Head Office and General Administration.

(c) One bacteriologist at ₱4,000 per annum.

(d) One laboratory assistant at ₱840 per annum.

(e) One chief clerk, at ₱1,200 per annum.

(f) One property clerk at ₱720 per annum.

(g) One record clerk at ₱720 per annum.

(h) One typist at ₱720 per annum.

*Field divisional units.*—(a) Divisional physicians at ₱3,000 per annum.

(b) Divisional nurses at ₱960 per annum.

(c) Divisional inspectors at ₱480 per annum.

*Provided*, That officers and employees shall be granted 10 per cent increase over their basic salaries for every five-year service, the longevity increase never to exceed 40 per cent of the basic salaries.

*Provided, further*, That medical officers shall be granted quarters allowance at the rate of ₱30 per month, and employees at the rate of ₱15 monthly.

6. The minimum divisional personnel and official time for physicians shall be as follows:

Classification of haciendas	Number of employees and laborers	Official time of physician	Number of divisional nurse	Number of divisional inspector
First class.....	Above 1,000....	One full-time.....	One for every 500.	One for every 500.
Second class.....	500 to 1,000....	Five hours daily....	One to two.....	Do.
Third class.....	100 to 500.....	Four hours daily....	One.....	Do.
Fourth class.....	Up to 100.....	Three hours daily, 8 days weekly.		Do.

7. Adjoining haciendas, from the 2nd and 4th class, shall be grouped into divisional units with one full-time physician, *Provided*, That the maximum quota of laborers for each unit shall not exceed 2,500.

8. The Director should cause the keeping and filing of such health and statistical records and other office records at the offices of the divisional physicians as may be necessary for the proper performance of the work of the field personnel, such records to be open to the inspection and revision of the medical officers of the Philippine Health Service.

9. The work of the personnel of the haciendas united health service should be subject to the supervision of the Director of Health, or his authorized agent.

10. In matters which may concern insular or provincial public health administration or may affect public health in any way, in territories outside the jurisdiction of the haciendas united health service, although originally of domestic character, the district officer or municipal divisional health officers should be duly consulted with before final action thereon should had been taken. *Provided*, That in matters of purely domestic nature, or affecting only the administration of the haciendas united health service, the Philippine Health Service, or its agents, shall not exercise supervision of any kind.

#### IV. SUMMARY

1. Yearly economical losses in haciendas from preventable disease about ₱100 for each laborer listed on the payrolls.

2. Problems of hygiene and sanitation in sugar haciendas are multitudinous. Their solution, total or otherwise, is dependent upon an efficient organization and stable financing on coöperative basis.

3. Purchase of health should be computed on the basis of five centavos per diem for each employee and laborer employed in each hacienda and for every member of a family dependent for support upon such employees and laborers.

4. The Philippine Health Service is willing to coöperate provided the planters are willing to help themselves. On no other basis can the Government enter into negotiations for systematized health work in sugar haciendas.

# HISTORY OF SMALLPOX AND VACCINATION IN THE PHILIPPINES<sup>1</sup>

By J. P. BANTUG, Ph.G., M.D.

*District Inspector, P.H.S.*

The Asiatic continent, the reputed cradle of civilization, is also the home of several of the great plagues, which, from time to time, in ages gone by, wrought havoc upon mankind. Smallpox is one of these.

We owe it to the Fathers of the Catholic Church, the description of the earlier epidemics in Europe. Marius, Bishop of Avenches, a Swiss, described the disease in 570 and was the first to employ the term "variola." Gregory of Tours records an epidemic in the ancient Gallas in 581. Rhazes (860-932), it was, though, the great Spanish-Arabian clinician of the later ninth century, who gave us the first accurate account of the disease, and for a long time, thereafter, was considered the sole authority on the subject. "So vivid and complete was the account," says Lieutenant Colonel Garrison, "that it is almost modern."<sup>2</sup> In 1080 Constantinus Africanus published a translation of the work of Haly ben Abbas, a Persian mage, who died in 994, which contained a description of smallpox. Gilbertus Anglicus, who died in 1250, the most noted physician in the Great Britain of his day, was the first of the continent to consider smallpox as a contagious disease, altho Yasuhori Tambu, a Japanese medical authority, records in the Ishinho as early as 982 the existence of lying-in hospitals and isolation houses for smallpox patients, thereby recognizing the contagious nature of the disease. Epidemics have, from time to time, visited the various countries of Europe. There were epidemics of the disease in Germany in 1497, in Sweeden in 1578, and again in 1749 and 1765; in Tuscany in 1764, in Paris in 1719, and in Vienna in 1763 and 1767. It was pandemic in Europe in 1614, epidemic in England during 1666-75, and scattered outbreaks

---

<sup>1</sup> Leída en la Octava Asamblea de Médicos y Farmacéuticos, febrero, 1927.

<sup>2</sup> An Introduction to the History of Medicine, by Fielding H. Garrison, A.B., M.D., 1922.

were recorded in New England all through the century. The disease was, therefore, quite familiar with the early Spaniards that first landed upon our shores. While its antiquity in the Philippines cannot be doubted, not only from philological considerations, the proximity of these islands to the Asiatic mainland and the ancient trade relations which have existed between them, centuries before the advent of the Europeans upon Philippine soil, would argue for it, and that the disease might have been brought from India, the Malay Peninsula, Cambodia, Siam, China, or Japan.

However, the earliest authentic epidemic in the Philippines of which we have any knowledge, was that of 1591 as recorded by Father Pedro de Chirino of the Society of Jesus. In describing this epidemic he says:

A plague of smallpox reigned in Manila<sup>2</sup> and its vicinity in the year one thousand five hundred and ninety-one which did not spare young nor old among the natives.

This evil raged in all the pueblos of the Doctrina of Balayan.<sup>3</sup>

in such a manner that one-third of the people was ordinarily in bed and there remained almost no person who was not taken ill, and many died of it, especially the grown and aged people,<sup>4</sup> and a brother religious, Father Francisco Colin, referring to the same epidemic, writes the following:

The disease which reigned there (Doctrina de Balayan) and in Manila and its entire vicinity, was smallpox which principally attacks the children and a few of the old people.<sup>5</sup>

In the long struggle against the disease, science was finally triumphant. The year 1796 is marked with a white stone in the annals of medicine, for in that year Jenner successfully performed preventive inoculation against smallpox, and for the first time made known his discovery to the suffering world. However, the practice of inoculation with the human virus goes back to the dim past. The ancient Hindus had knowledge of it and the early Chinese certainly practised it. Lady Hary

<sup>2</sup> Manila comprised at that time parts of what is now the Province of Rizal.

<sup>3</sup> The Doctrina de Balayan covered what is now Batangas Province and parts of the Province of Cavite. The principal towns of the doctrina were Santiago, Indan (in Cavite), Lian, and Manisua.

<sup>4</sup> Chirino, P. Pedro de: *Historia de Filipinas*, quoted by P. Colin in his *Labor Evangélica*, Pastell's edition, Vol. 1, 1904, p. 511.

<sup>5</sup> Colin, P. Francisco: *Labor Evangélica*, Pastell's edition, Vol. 1, 1904, p. 511.

Wortley Montague introduced it in England in 1721, but Jenner's work established a permanent working principle in science, based upon experimental demonstration, and his was the first of that long series of achievements in public health work that have now become the common heritage of mankind. "His monograph of 1798," in the graphic language of Garrison, "remains as unimpeachable record of careful scientific work, the effect of which is seen today in the rapid strides that preventive medicine is making and in the results of compulsory vaccination in Prussia and Holland, where the mortality curve of smallpox approaches zero as its limit. Striking, indeed, was the relative immunity of the German Army of the Franco-Prussian War in 1870-71, in which the unvaccinated French prisoners lost 1,963 out of 14,178 cases of smallpox, while the Germans, who had been revaccinated within two years, had 4,835 cases and 278 deaths (Myrdaez). Kitasato's statistics of vaccination in the Russo-Japanese War (1911) show that, with smallpox endemic in Japan, there were only 362 cases and 35 deaths in an army of over a million soldiers." Moreover, that tract contains an early reference and a clear explanation of anapylaxis or allergy as we know it today.

Amar, and certainly Balmis, one of the royal household physicians, were the earliest champions of vaccination in Spain and the story of its introduction in the Philippines reads like an epic poem worthy of the proudest years of Spain when the scepter of Castillo hold sway over a vast colonial empire, where it was truly said the sun never set. With wisdom and foresight, and moved undoubtedly by the tales of suffering that the disease was making in the American continent as well as in the far off Philippines, Charles IV was led to secure for his subjects overseas the inestimable blessings of vaccination, while the rest of Europe was still wrangling about the merits of the new discovery. Under the leadership of Dr. Francisco Xavier de Balmis, an elaborate expedition was fitted out to introduce vaccination into the Colonies. Commanded by frigate Lieutenant D. Pedro del Basco, the corvette "Maria Pita" set sail from the port of La Coruña in Northern Spain, on November 30, 1803, in compliance with a Royal Decree of September 1st of the same year. There were seven physicians on board besides the necessary number of nurses and attendants, under the direction

of Balmis, and 27 children, with their mothers or nurses, two of whom were inoculated shortly before, and the rest at stated regular intervals, in the course of the navigation, the only means then known to preserve the virus in the freshest state possible and spread it everywhere. "Each of these children," says Repiede, "and others who were utilized for this purpose were adopted by Charles IV as particular children of the fatherland, and the Government took charge of their maintenance and education until they were able to take care of themselves."

On this errand of mercy, Balmis and his companions tarried in the Americas for nearly two years, arriving in Manila on boardship the frigate *Magallanes* on April 15, 1805, and had the glory of "depositing in these Islands that inexhaustible source of health, prosperity, and increase of population."

The Filipinos, not unmindful of the benefits received, erected a life-sized statute of Charles IV on the Plaza del Palacio, now Plaza McKinley, Manila, on which may be read the following inscriptions:

To King Charles IV of Bourbon, out of gratitude for the beneficent gift of vaccination. The inhabitants of the Philippine Islands. The Filipinos erected the statue in the year MDCCCXXIV.

The Ayuntamiento of Manila build this fountain in the year MDCCCLXXXVI.

This statue was ordered made in Mexico by Governor-General Rafael María Aguilar, late in 1805, but it was decided to make the bronze cast here as the ₱6,000 needed to cover the expenses could not be advanced by the City of Manila. It was, therefore, made in the Ordnance Department of Fort Santiago, under the technical direction of Colonel Ambrosio Casas of the Royal Prince Battalion, a native of Binondo. The statue was finished in 1808, two years after the work was commenced. The goldsmiths of Sta. Cruz and Ermita had gilded in at a cost of ₱3,000. It appears, however, that the statue was not formally dedicated until 1824.

The following day after the arrival of the expedition, the Commission commenced work. The first to be inoculated were the Governor-General's own children, in order to dispel any mis-

---

\* Pedro de Repiede in *El Liberal*, Madrid, no date.

'Principios de Vacunación para el uso de los vacunadores de las provincias de las Islas Filipinas por D. J. M. B., Manila, 1838, pp. 3-4.

conception that the people might entertain against this newly introduced measure. Within a few days a large number of children in the city and environs were vaccinated.

As a direct offspring of this royal gift, the Central Institute of Vaccination was created with headquarters in Manila, the specific duty of which was to preserve and propagate the virus. The virus was passed from arm to arm every nine days among susceptible children, later in young calves, and then preserved in a more or less natural state between two pieces of thick smooth glass, 1 inch square, sealed with paraffin or wax or kept in capillary tubes and in this way was transported to the provinces.

The Central Institute of Vaccination was composed of

H. E., the Governor-General, as Chairman,  
 H. G., the Archbishop of Manila,  
 The Lord Mayor of the City,  
 The City Attorney,  
 The Provincial of the Agustinian Order,  
 The Provincial of the Franciscan Order,  
 The Provincial of the Dominican Order,  
 The Provincial of the Recolect Order,  
 The Chief Physician of the Institute,  
 The Assistant Chief Physician of the Institute, and  
 The Physician Secretary.

District Health Officers (*médicos titulares*) were entrusted with the general sanitation in the provinces, but there were *vacunadores generales* and *vacunadores titulares* in every provincial capital, numbering 122 in all at the end of 1897, with salaries ranging from 75 to 100 pesetas per month in the provinces of the third class and 150 in the first class, and as many private ones as desired to practice it, besides the *vacunadorcillos*, who were stationed one in each municipality.

One of the chief duties of every vaccinator was to perform a general vaccination in his respective district at least once a year. The arrival of the vaccinator in a town or barrio was announced by a *bandillo* issued by the town mayor or *capitán municipal*, so that parents and guardians might take their children to the town hall to be vaccinated. This was done free of charge, but when performed in private house, a charge of two pesos was made, if by a vaccinator, or four pesos, if by the district health officer, one half of the fees was turned over to



the public treasury and the other half retained by the vaccinator or the district health officer as the case might be. The age at which children were advised to be vaccinated was between 2 and 5 months. Either vaccination was not carried out thoroughly or the virus used was frequently inactive, especially in remote provinces, that in spite of it, smallpox was common and characterized by a seasonal prevalence that was astonishing. It was even regarded as a necessary evil in childhood, that, variolation, from arm to arm, was resorted to to get thru with it, and with what fatal consequences, the older generation of physicians will here testify.

With the success of vaccination and the ease with which the virus could be preserved, variolation was discarded to the extent that it was declared a felony by an Act of the English Parliament in 1840.

Smallpox was a notifiable disease during the Spanish régime. As soon as cases are observed, the town vaccinator reported the fact to the district health officer or the chief vaccinator, who in turn notified the provincial executive, so that measures might be instituted to check the spread of the disease.

As early as 1769 Angelo Gatti, of Pisca, then practising in Paris, maintained that smallpox was caused by the introduction of a living specific virus, capable of reproducing itself, but it was not till 1894 that Giuseppe Guarniero found and described *Cyterycles variolæ*, a protozoon, in the skin lesions of smallpox cases and ten years later, Gary N. Calkins, traced its life history.

The general systematic vaccination under the present régime was undertaken about 1905. The measure is now compulsory. The Revised Administrative Code of 1917, 1926 edition, provides that every person in the Philippine Islands shall submit to vaccination when thereunto lawfully required, unless satisfactory evidence is presented to the effect that he is immune from smallpox. The law also requires parents, guardians, or persons having charge of one or more children over three months of age to present them for examination and vaccination at such place and time as may be ordered by proper authority. The employment of smallpox virus or of smallpox lymph, either directly or indirectly, for inoculation of any human being is strictly prohibited, to eliminate the possibility of transmitting other infectious diseases by such route.

The number of vaccinations performed from 1904 to 1925, inclusive, was as follows:

*Number of vaccinations for each of the years from 1904 to 1925, inclusive<sup>1</sup>*

Year	Total	Manila	Provinces
1904.....	222,138	151,879	70,259
1905.....	1,063,823	120,121	943,702
1906.....	1,245,893	(*)	1,245,893
1907.....	2,022,380	(*)	2,022,380
1908.....	1,800,564	113,797	1,686,767
1909.....	865,198	47,003	818,195
1910.....	1,521,937	41,710	1,480,227
1911.....	1,472,749	74,533	1,398,216
1912.....	1,216,080	88,565	1,127,515
1913.....	1,524,169	104,817	1,419,352
1914.....	1,635,857	76,640	1,556,217
1915.....	1,265,107	48,588	1,216,519
1916.....	819,138	55,973	763,165
1917.....	764,680	81,390	683,290
1918.....	8,718,963	414,410	3,304,553
1919.....	7,638,193	360,712	7,277,481
1920.....	3,523,749	257,951	3,265,798
1921.....	2,490,885	138,517	2,352,368
1922.....	2,120,802	111,649	2,009,153
1923.....	2,132,653	78,488	2,054,165
1924.....	2,730,829	134,668	2,596,161
1925.....	2,891,901	108,692	2,783,209

<sup>1</sup> From statistics compiled in the Office of Vital Statistics, Philippine Health Service.

\* No reports available.

The following table shows the number of deaths from smallpox for each of the years from 1904 to 1925, inclusive.

Year	Population	Smallpox	
		Deaths	Rate per 100,000
1904.....	7,184,197	10,146	141.2
1905.....	7,341,406	5,112	69.6
1906.....	7,498,615	4,051	54.0
1907.....	7,655,824	3,026	39.5
1908.....	7,813,033	8,734	111.8
1909.....	7,970,242	6,237	78.3
1910.....	8,127,451	3,044	37.5
1911.....	8,284,660	1,192	14.4
1912.....	8,441,860	567	6.7
1913.....	8,599,078	903	10.5
1914.....	8,756,287	438	5.0
1915.....	8,913,496	273	3.1
1916.....	9,070,705	251	2.8
1917.....	9,227,914	390	4.2
1918.....	9,492,328	17,462	183.3
1919.....	9,478,929	49,971	527.19
1920.....	9,627,450	6,632	58.91
1921.....	10,081,267	728	7.22
1922.....	10,547,349	19	0.18
1923.....	11,067,117	4	0.4
1924.....	11,204,415	1	0.009
1925.....	11,401,708	1	0.009

The above table shows conclusively that the number of deaths from smallpox decreased especially after 1908, when systematic vaccination may be said to have terminated. Prior to 1918, cases of varioloid were noticed to be on the increase, especially after 1914, and several district health officers sounded the warning that the immunity conferred by the last general vaccination

was being lost, but the general vaccination was not started till the epidemic of 1918 was well under way. The epidemic of 1918 only confirmed the view held long ago by Dr. Benito Francia, the last Director of Health and Charities under the Spanish régime, that the immunity from smallpox conferred by vaccination lasts from seven to ten years at the most, after which revaccination is necessary. This is practically the policy of our vaccinating parties, to cover each province at least every seven years. Notwithstanding this fact, vaccination against smallpox still remains the most effective measure in the whole range of preventive medicine that we have today for the prevention and eradication of this disease, and is undoubtedly one of the greatest boons to struggling humanity.

# THE OBJECTS AND ACTIVITIES OF THE INDUSTRIAL HYGIENE SECTION OF THE PHILIPPINE HEALTH SERVICE

By

R. VILLAFRANCA, M.D.

*Chief, Office of General Inspection, and*

M. C. ICASIANO, M.D.

*Factory Physician, P.H.S.*

## OBJECTS

About the middle of the year 1924, news was propagated in the United States that our coconut oil and tobacco products were manufactured under insanitary conditions, and by laborers who were suffering from loathsome diseases. This prompted the Philippine Health Service to investigate immediately all the factories affected. The first step taken was the organization of the Section of Industrial Hygiene.

We would express in a few words the objects of this office by quoting Doctor Robertson's statement. "The objects of this section are, to improve the sanitation in factories and industrial establishments with a special effort to promote the health and well-being of the laborers, to attempt educative measures amongst them, and to eliminate or minimize the industrial health hazards. The health and comfort of the workers are vital factors in production, as accidental injuries by incapacitating the same retard production. Industrial workers and the public in general must recognize that the problems of industrial hygiene—the prevention of sickness and accidents—are important phases of public health, and, therefore, constitute responsibilities that the Government bears to the people. The determination of harmful conditions and the establishment of improvements involve scientific study and the assistance of technical experts. Two beneficial results are derived from supplying with this service—the conservation of the lives and health of industrial workers and increased production—both, matters of high national advantage."

## ACTIVITIES

The activities of the section started with the investigation of the sanitary conditions of the oil factories within the City of Manila. The process of oil production has been carefully studied from the raw coconut to the finished product which is ready for exportation. Laborers were thoroughly examined physically and specimens of sputum, feces, and blood were taken for laboratory examination. As a result, it was found that the handling of copra and the manufacture of oil were done under good sanitary conditions and the process of extracting oil was such that the oil produced was not only clean but sterile. The publicity of the report of this investigation counteracted the bad impression that the American public had on one of our industrial products.

Next to this much of the time has been devoted to factories of tobacco products. It was found out that the most common deficiencies were not due to tobacco itself but to the lack of hygiene among the cigar makers and the factories in general. Factories under unsatisfactory conditions have been given more attention and due corrections instituted. Plans and specifications of the desired sanitary improvements are furnished to the managers of factories giving a reasonable period of time within which they should be effected. A scorecard is used for the purpose of grading the sanitary conditions of factories, and 75 per cent is the minimum grade under which a factory may be opened or continue to function; below 75 per cent, applications are disapproved and existing factories or others closed; a grade below 85 per cent deprives factories of the use of the Philippine Health Service label, a guarantee that the product has been prepared under sanitary conditions. Preemployment and periodic medical examination of laborers which were never done before were made compulsory.

This campaign proved successful. At the beginning of the inspection work, only 11 per cent of all the factories inspected were found in satisfactory conditions. Ninety-five per cent showed evidence of the laborers spitting on the floor and a similar percentage had their clothes hanging around the workrooms. Later, however, 35 per cent of all the factories were found in satisfactory conditions. The incidence of spitting on the floor was reduced to 30 per cent and the hanging of dirty clothes around the workrooms, only 3 per cent.

At present there exists a high standard of sanitation in the tobacco industry. Lavatories are provided in all factories, big

or small, at the main entrance and near every closet. All of the closets in the city factories are flush systems and the majority of those in the nearby towns are septic tank flush systems. Hanging clothes are no longer evident in most workingrooms. Even in the worst cases, they are at least retired in a corner of the room. Spitting is reduced to the minimum. Physical examinations are made from time to time by the personnel of our section and contagious cases prevented from working. The management of the different factories were advised to provide the laborers with dressing rooms or some sort of individual lockers and dining rooms.

Another important activity which followed is the investigation of hazards. The factories so far surveyed in this connection are the following: the cement factory, a match factory, mirror shops, a hat factory, steam and hand laundries, fertilizer factories, cordage factories, marble and cement works, rice mills, button factories, silversmith and engraving shops, printing establishment, electric battery shops, and slipper and hand-made shoe factories.

The existence of hazards in each industry, such as dust and dirt exposure of laborers, fatigue, devilitized air, temperature, inactivity, infection, and darkness were carefully studied. Other conditions which affect the health of the laborers, directly or indirectly, were also noted. Among these mention may be made of the age of the laborers, physical fitness in their particular line of work, health appliances, allowance for absences due to sickness, health instructions, medical supervision, first aid, labor unions, etc.

With the very rare exception, we may say that the attitude of the owners and managers towards the health of the laborers is that of indifference. They take good care of the iron machineries of the factory but not of the more delicate human machines. Wages earners had to accept any working terms, no matter how hazardous, partly due to hardship in securing an employment, and unfortunately in many cases partly due to ignorance. Even labor leaders and unions are indifferent towards the working environments in factories. They fight wage reductions or plead for its increase, but it is immaterial to them if the working conditions reduce the vitality and shorten the lives of the laborers. It is believed that the only the Government can wisely act by improving the environments of industrial establishments which has not received due attention from both labor and capital. Our experience has shown that in prac-

tically all the factories surveyed certain hazards were found where they ought not to exist and, therefore, are easily preventable.

Just a few words on industrial health hazard. This, according to Hayharvest, may be defined as "any condition or manner of working that is unnatural to the physiology of the human being so engaged. This physiology is adaptable to quite wide variations in environment, but the rule holds absolute that the subjection to conditions which are unnatural to the physiology and habit of man results in pathology or disease."

By hazard, therefore, we mean here not only the hazards to life and limb but also to health and longevity.

In oil mills the principal hazards observed are fatigue and heat. Laborers work in 8 hours shift, during which time they are continuously on their feet carrying heavy objects or doing hard muscular work in a hot environment.

In a match factory, dirt and fatigue are the predominating hazards. The factory is always dirty and the laborers, the majority of them females, work in continuous standing position. The possibility of phosphorous poisoning is rather remote as amorphous phosphorous is being used instead of the more poisonous form.

In a cement factory the main hazard found is dust present in excessive amount. This is a serious problem that needs a detailed investigation.

In mirror shops there is no serious hazard observed although at the beginning it was thought that they may be exposed to some. In the silvering process, silver nitrate and not mercury is being used and, the possibility of poisoning is negligible. Fatigue and the danger of continuously being wet while working constitute the hazards for the laborers. Glasses were ground under running water so that the laborers have to be wet at all times while working.

In the hat and umbrella factory the most serious hazards are the dust which are continuously present in the atmosphere of the workrooms, fatigue due to the standing posture of the workers and the muscular efforts during the pressing process, poor lighting and humidity in the laundry department, and the faulty posture of the female workers in the hat dressing and umbrella departments.

In the laundries fatigue from the constant standing posture, exposure to dampness and being wet at all times are the main hazards.

In the fertilizer factories, dust and fatigue constitute the main hazards. This was found to be the dustiest industry in the city. Laborers while working are completely enveloped in a cloud of dusts.

In the cordage factories the hazards observed are dust, lack of safety appliances attached to the dangerous machines, jarring produced by the heavy movements of the machineries, fatigue due to standing posture, and excessive noise. The noise is so loud that one can not hear even a shout at about 3 meters distance. Tinnitus aurium and partial temporary deafness will accompany any visitor to these factories.

In marble work shops the hazards are dust and fatigue. Dust comes not only from marble but also from the streets. There is a tendency for these establishments to be located in the lower floor of houses bordering streets of heavy traffic. Pulmonary tuberculosis has been observed to be a common disease among marble workers.

In silversmith and engraving shops, the chief hazards are metal dusts chips from drilling machines, faulty postures, and fatigue. Poisonous substances, the used, is not hazardous.

In the printing establishments, especially in modern plants where molten lead is used, such as in linotyping, monotyping, electrotyping, rotograveur, and stereotyping, lead poisoning is one of the principal hazards. The common practice among type setters (in small and big shops alike) of holding the types in their mouths, increases the possibility of lead poisoning. Infection seems to be another danger among the printers. Tuberculosis is so prevalent that this disease may be classed as a common hazard among printers. *Pyorrhea alveolaris* has also been observed to exist in almost alarming proportion among the workers. Mouth holding of the types plays an important rôle in the spread of this disease.

In electric battery shops lead poisoning has been observed to be a possible hazard.

Speaking of the effect of hazards enumerated above, we may mention the following:

Ventilation, as a general rule, is not a problem in our factories due to the general construction of factory buildings which permits of a free circulation and constant change of air and because of the absence of cold weather that compels the tight closing of doors and windows as is done during winter in foreign lands. In some factories, however, particularly tobacco factories, there is at times a tendency on the part of the laborers



to close the windows and doors to prevent the tobacco materials from drying. Under these conditions we have a case of air stagnation which is unhealthy. Dead air fails to promote evaporation from the surface of the skin and to stimulate the sensory nerve endings located in the skin, both of which are necessary to maintain a good circulation of the blood.

### FATIGUE

This is one of the principal hazards observed in our factories. Fatigue is defined as loss or irritability and contractility brought on by functional activity.

The sensation of fatigue is due to the accumulation of waste products (called fatigue poisons and fatigue toxins) within the system from muscular wear and tear together with the expended nervous energy. One of its effects in the body is to render the system more susceptible to disease. The general effect of overwork and chronic fatigue are characterized by loss of appetite, anemia, digestive disarrangement, respiratory and cardiac inefficiencies, fatigue neurosis, neurasthenia and general deterioration of health.

### HEAT

Exposure to heat for a short period is sometimes borne without serious effects provided the air is kept in motion. Prolonged exposure, however, is usually followed by grave constitutional disturbances. When the effects are extremely apart from heat exhaustion, the most frequent acute manifestations observed are colic, concentrated urine and muscular cramps. These symptoms are believed to be more or less influenced by toxins generated within the body. In the long run heat produces anemia, catarrh, rheumatism, Bright's disease, skin eruption, gradual fibrosis, and premature old age. Many persons who are exposed to heat not infrequently suffer from pigmentation and inflammation of the skin, inflammatory condition of the eye and even cataract probably induced by a partial dehydration of the tissues. Nervous affection such as headache, dizziness, and general irritability are also observed.

If heat is combined with moisture the effects upon health are still worse, since the failure of opportunity for evaporation of the normal perspiration on the surface of the body is interfered with, thus disturbing seriously the heat regulating mechanism. This condition is particularly true in steam laundries, wool-hat factories, foundries, boiler works, city gas factories, and oil mills.

## DUST

Dust act upon the body in five principal ways: (a) by mechanically obstructing the air passages, (b) by lacerating the delicate lining membrane of the air passages, (c) by conveying soluble poisonous materials into the system, (d) by conveying germs, and (e) acting as irritants upon the skin, choking the sweat and sebaceous gland ducts and irritating the epitheleum.

Generally speaking the effect of dust in the system may be either acute, causing prompt irritation reflexes such as cough, increased secretion of tears, etc., or subacute or chronic causing congestion and inflammation of the lining membranes of the respiratory passages. It is not rare for workmen when first entering a dusty trade to suffer severely from acute carriza, with sneezing and watering of the eyes, and sometimes slight fever.

In the respiratory organs dust cause a primary congestion and swelling of the membranes lining the nose. The larynx may be irritated. Cough is common and there may be hoarseness. Acute and chronic bronchitis are the usual results of persistent inhalation or irritant dusts.

Dust, apart from its effect on the respiratory organ, affects the eye, ear, nose, and throat as evidences by the existence of many cases of chronic inflammatory condition of these organs in cement plants, marble works, rice mills, and wool-hat factories. According to D. G. Robertson, dust generated in the manufacture of pearl buttons from shell of certain mussels is liable to produce a peculiar form of osteo-myelitis, involving especially the long bones of youthful workers. So far, however, no cases of this disease has yet been found by us in our investigation of the shell-button factories in this city.

## ABNORMAL POSITION OF THE BODY

Constrained working positions, combined with sedentary lives, are specially harmful in youthful workers whose osseous systems are not fully developed, and there is little doubt that most of the bones and joint deformities are developed in the earlier years of their work, and aggravated by habit. Among the more important should be mentioned the hollow and round chest and round stooped shoulders caused by a stooping and cramped position, as seen specially among tobacco strippers, slipper and shoe makers, marble workers, tailors, engravers, lithographers, watch-makers, and all others obliged to assume a more or less bentover position. All chest postural deformities naturally interfere

with free expansion of the lungs and, hence, with the respiratory functions. A stooped and bending position also interferes with the proper distribution of the blood supply and invites congestion of the abdominal and pelvic organs. As a matter of fact a large number of these laborers show a peculiar predisposition to tuberculosis; many suffer from anemia, constipation, dyspepsia, and hemorrhoid, and as a whole their duration of life is low.

Works requiring long standing produce in youthful laborers flat foot, knock knee, and varicous veins.

#### DIRT

Dirt is classified as a health hazard, not because it is undesirable to the cultured, but because dirt and disease coexist. Dirt accumulating from trade processes becomes dust. A dirty place is the first place in which one is inclined to spit, hence, dirt accumulations is very liable to harbor disease germs. Giving dirt a wider scope, we may classify as dirt the disorderly accumulations of materials, by-products, and waste products. They have a subconscious deteriorating effect upon morals, upon the inclination and the ability to work, and upon the observance of health standards beyond the work-place.

#### UNPROTECTED MACHINES

These are hazards that endanger not only the health of laborers but their limbs and life as well and should never be allowed to exist in any factory.

#### NOISE AND JARRING

Gives the same effect as that discussed under fatigue.

#### INFECTION

Many wage earners are exposed thru factory environments or process of manufacture to infection, blood poisoning, and communicable diseases. Among the principal factors we mention: (a) over-crowding which enhances the spread of all communicable diseases; (b) the common use of drinking cups and towels, (c) improper closets; (d) spitting upon the floor; (e) sweeping during work hours; (f) absence of cuspidors; (g) the handling of infectious materials like hides, soiled clothes, etc; and (h) the handling or mounting of articles just previously handled or mouthed by another person. Infection may also take place thru trivial injuries, flying particles, cracking or fissuring of the skin, eczemas, etc.

## PHYSICAL EXAMINATION

Physical examination of industrial laborers are being performed for several reasons: First, to find out cases of communicable diseases that endanger the health of the other laborers. These are referred to free dispensaries for treatment. But, meanwhile, they are excluded from working till certified cured. Follow-up work is also being done to see that such laborers are being properly treated. Second, to find out what particular disease or diseases predominate in each factory or trade, the cause of such disease or diseases, and the way to prevent the same. Third, to find out the incidence of different diseases among industrial workers. This is of course hard if not impossible. Only incipient or mild cases, the majority of which are hard to diagnose, are found in the factories. More serious or advanced cases stay in their houses either at their own initiative or discharged by the managers for inefficiency. Notwithstanding this difficulty, we have to rely on actual examination of individual laborers, if not to have a more or less accurate data, at least to have an idea of the disease common to industrial workers. This is the only way at present as we do not have any statistics concerning morbidity and mortality of occupational diseases.

## CONCLUSION

This is not a scientific paper, but rather a presentation of facts concerning our efforts to develop the branch of industrial hygiene in this country. The objects and expected benefits to the community are explained to you for your consideration, the way it function to show you our difficulties and ask for suggestions and help that you may offer to give.

Among many other things we need to know where, how, and to what extent occupational diseases are occurring. Our best method at hand, the physical examination of laborers, only show us incipient, benign and hardly diagnosticable cases. Those crippled by occupation or advanced cases can not be found in factories. These cases fall in your hand as medical practitioners and it is only thru your aid that we may be able to know and trace these cases.

We need to know the incidence of mortality due to or aggravated by a particular occupation. The death certificate from which a little light may be gathered gives as occupation such words as *laborer*, which may mean a farmer, a cigar maker, a street sweeper, a water carrier, and what not.

We need to know the incidence of diseases as affected by a particular trade or occupation, and hospital record where we may expect to find such data, are wanting in the specification of occupations.

We also need for a standard classification of occupations for the recording of diseases and deaths among laborers by physicians and medical and scientific institutions.

We need more men trained to handle the problems of diseases as affected by occupation. We feel the necessity that our medical students be trained in this line or modern medical problem, the industrial hygiene.

Industry is fast being revolutionized in the Philippines. Before long, the Health problems that confronted big cities in England and America will be faced by our country. Already the high percentage of morbidity and mortality in industrial establishments is giving the alarm signal. We are men of science and, we, more than any other people, must feel it our responsibility to heed that alarm. Let us practice the old adage that an ounce of prevention is worth more than a pound of cure.



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of April, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1927 <sup>1</sup> BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	294,137
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All Others.....	2,188
<b>Total.....</b>	<b>320,394</b>

### BY DISTRICTS

Districts	Population
<b>No. I, MESEIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,538</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,238
5. Quiapo.....	15,862
6. San Miguel.....	4,434
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,232</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,816
9. Intramuros.....	14,625
10. Ermita.....	16,139
11. Malate.....	16,471
12. Paco.....	16,037
13. Pandacan.....	5,861
14. Santa Ana.....	6,675
<b>Total.....</b>	<b>80,624</b>
<b>Grand total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, APRIL, 1927**

Date	Pressure mean <sup>1</sup>	Temperature					
		In shade <sup>2</sup>					Underground
		Mean	Absolute maximum	Day	Absolute minimum	Day	0.50 m.
	mm.	°C.	°C.		°C.		°C.
1-10.....	758.57	27.7	36.5	10	20.4	1	29.8
11-20.....	59.19	28.9	37.0	14	22.0	16	31.0
21-30.....	58.52	27.8	35.6	21	22.5	24	30.5

Date	Relative humidity				
	Mean	Daily mean maximum	Day	Daily mean minimum	Day
	Per cent	Per cent		Per cent	
1-10.....	72.8	76.9	9	66.0	1
11-20.....	66.9	73.6	11	61.6	16
21-30.....	76.4	84.5	25	68.2	23

Date	Prevailing direction	Wind			Atmidometer <sup>1</sup> (open air)		
		Velocity			Total	Daily maximum	Day
		Total	Daily total maximum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	SE quad	1,905.5	246.0	3	59.5	8.0	1
11-20.....	E quad	1,973.0	245.0	16	71.6	9.1	16
21-30.....	E quad	1,500.0	212.5	21	44.3	6.9	23

Date	Sunshine			Rainfall	
	Total	Daily maximum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	73 05	10 20	1	6.6	3
11-20.....	75 00	10 40	16	0.0	0
21-30.....	74 25	8 45	22	69.0	3

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	5	7	12	46.62
Filipinos.....	546	553	1,099	45.49
Spaniards.....	4	3	7	43.59
Other Europeans.....	3	2	5	54.06
Chinese.....	28	26	54	36.82
All others.....	3	3	6	33.42
Total and average.....	589	594	1,183	44.95



## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I, MEISIC:							
1. Tondo.....	147	126	273	8	9	17	290
2. San Nicolas.....	40	37	77	3	4	7	84
3. Binondo.....	15	30	45	1	1	2	47
Total.....	202	193	395	12	14	26	421
No. II, SAMPALOC:							
4. Santa Cruz.....	73	68	141	7	7	14	155
5. Quiapo.....	16	21	37	1	.....	1	38
6. San Miguel.....	11	14	25	1	1	2	27
7. Sampaloc.....	71	83	154	2	4	6	160
Total.....	171	186	357	11	12	23	380
No. III, PACO:							
8. Port Area.....	.....	.....	.....	.....	.....	.....	.....
9. Intramuros.....	26	40	66	1	3	4	70
10. Ermita.....	28	31	59	2	2	4	63
11. Malate.....	67	65	132	3	3	6	138
12. Paco.....	33	24	57	.....	1	1	58
13. Pandacan.....	14	7	21	1	.....	1	22
14. Santa Ana.....	17	12	29	1	1	2	31
Total.....	185	179	364	8	10	18	382
Grand total.....	558	558	1,116	31	36	67	1,183

Attended by physicians, living, 405; stillbirths, 27.

Attended by midwives, living, 97; stillbirths, 1.

Attended by families, living, 681; stillbirths, 24.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	5	.....	5	19.42
Filipinos.....	314	311	625	25.87
Spaniards.....	1	2	3	18.68
Other Europeans.....	1	2	3	32.44
Chinese.....	14	4	18	12.27
All others.....	3	1	4	22.28
Total and average.....	338	320	658	25.00

# **NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MAZISIC:</b>			
1. Tondo.....	106	102	208
2. San Nicolas.....	32	23	55
3. Binondo.....	10	10	20
<b>Total.....</b>	<b>148</b>	<b>135</b>	<b>283</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	55	48	103
5. Quiapo.....	8	11	19
6. San Miguel.....	5	6	11
7. Sampaloc.....	49	41	90
<b>Total.....</b>	<b>117</b>	<b>106</b>	<b>223</b>
<b>No. III, PACO:</b>			
8. Port Area.....	1		1
9. Intramuros.....	8	15	23
10. Ermita.....	15	13	28
11. Malate.....	27	21	48
12. Paco.....	13	15	28
13. Pandacan.....	2	8	10
14. Santa Ana.....	7	7	14
<b>Total.....</b>	<b>73</b>	<b>79</b>	<b>152</b>
<b>Grand total.....</b>	<b>338</b>	<b>320</b>	<b>658</b>

# **NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	114	105
Divorced.....		
Widowed.....	39	54
Single.....	250	197
Conditions not stated.....	2	
<b>Total.....</b>	<b>405</b>	<b>356</b>
<b>Grand total.....</b>	<b>761</b>	

Stillbirths.....	52
Number of deaths with medical attendance.....	552
Number of deaths without medical attendance.....	209

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	83	70	11	6	170
1 year plus.....	28	42	4	2	76
2 years plus.....	25	12	2		39
3 years plus.....	10	10		2	22
4 years plus.....	5	9		1	15
5 to 9 years.....	13	8	1		22
10 to 14 years.....	6	4		3	13
15 to 19 years.....	12	13	3	2	30
20 to 24 years.....	15	8	8	3	34
25 to 29 years.....	17	14	8	4	43
30 to 34 years.....	14	16	6	6	42
35 to 39 years.....	14	16	2	2	34
40 to 44 years.....	8	17	6	1	32
45 to 49 years.....	15	8	7	1	31
50 to 54 years.....	14	8	3	1	26
55 to 59 years.....	16	9	5	1	31
60 to 64 years.....	8	11		1	20
65 to 69 years.....	4	8			12
70 to 74 years.....	8	6			14
75 to 79 years.....	10	4			14
80 to 84 years.....	11	9			20
85 to 89 years.....	1	5			6
90 to 94 years.....	1	7			8
95 to 99 years.....		1			1
100 years and over.....		5			5
Age not stated.....					
Total.....	338	320	66	36	760

NOTE.—One male Filipino, age and permanent residence unknown, not included in the above table.

## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	I. Epidemic, endemic, and infectious diseases													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....			7										7
	Malaria:													
	a. Malarial fever.....	1			1									2
7	b. Malarial cachexia.....			2										2
10	Measles.....			1	1									2
11	Diphtheria.....			1										1
	Influenza:													
	a. With pulmonary complications specified.....			2										2
16	b. Without pulmonary complications specified.....			1		1								2
	Dysentery:													
	a. Amebic.....			1	1					1				3
	b. Bacillary.....			7	1									8
	c. Unspecified or due to other causes.....			5	7									12
21	Erysipelas.....				1									1
23	Lethargic encephalitis.....			1										1
24	Meningococcus meningitis.....			1										1
29	Tetanus:													
	a. Umbilical.....			1										1
	b. Others.....			1										1
31	Tuberculosis of the respiratory system.....			71	71									146
32	Tuberculosis of the meninges and central nervous system.....	1		5	2					2	1			8
33	Tuberculosis of the intestines and peritoneum.....			1	4					1				6
37	Disseminated tuberculosis:													
	a. Chronic or unspecified.....			1										1
38	Syphilis.....			1	1									2
43-69	II. General diseases not included in Class I													
44	Cancer and other malignant tumors of the stomach, liver.....			2										2
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....				3								1	4
46	Cancer and other malignant tumors of the female genital organs.....				2						1			3













NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other European		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
165-203	<i>XIV. External causes</i>													
165	Suicide by solid or liquid poisons (corrosive substances excepted).....				1									1
182	Accidental drowning.....			1										1
185	Accidental traumatism by fall.....			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	a. Railroad accidents.....			2										2
	c. Automobile accidents.....			1										1
	Total.....	3	1	49	33	1			2	12		1		102
	Grand total.....	4		82		1		2		12		1		102

## INFANT MORTALITY

Causes of death	Under 24 hours	24 hours to under 36 hours	36 hours to under 48 hours	48 hours to under 14 days	14 days to under 1 year	Total
11. Influenza:						
a. With pulmonary complications specified.....					2	2
16. Dysentery:						
b. Bacillary.....					1	1
c. Unspecified or due to other causes.....					1	1
21. Erysipelas.....					1	1
24. Meningococcus meningitis.....					1	1
29. Tetanus:						
a. Umbilical.....				1		1
32. Tuberculosis of the meninges and central nervous system.....					1	1
38. Syphilis.....					2	2
41. Purulent infection, septicemia.....					1	1
55a. Beriberi, infantile.....				2	13	15
56. Rickets.....					1	1
69. Other general diseases.....					1	1
71. Meningitis:						
a. Simple meningitis.....					4	4
99. Bronchitis:						
a. Acute.....					26	26
b. Chronic.....					3	3
100. Broncho-pneumonia:						
a. Broncho-pneumonia.....					36	36
b. Capillary bronchitis.....					1	1
103. Congestion and hemorrhagic infarct of the lung.....				1		1
108. Diseases of the mouth and annexa.....					1	1
113. Diarrhea and enteritis.....					23	23
126. Peritonitis without specified cause.....					1	1
128. Acute nephritis.....					2	2
152. Furuncle.....					1	1
160. Congenital debility, icterus, and sclerema.....	4	1		9	3	17
161. Premature birth; injury at birth:						
a. Premature birth (not still-born).....	9	1		2	1	13
b. Injury at birth (not stillborn).....				1		1
162. Other diseases peculiar to early infancy.....	6	1		5		12
Total.....	19	3		21	127	170

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set.....	21,420
Number of rats caught by spring traps.....	2,949
Number of cage wire traps set.....	660
Number of rats caught by cage wire traps.....	8
Number and kind of baits (coconuts).....	22,740
Number of poison portions placed.....	22,792
Number of rats found poisoned.....	339
Number of rats killed by clubs and other weapons.....	987
Number of rats found dead from other causes.....	622
Total number of rats otherwise caught, found dead or killed.....	4,900
Total number of rats sent to the Laboratory for examination.....	4,900
Total number of rats found positive for plague.....	0

TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF APRIL, 1927, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.....	No. 1.....	5	1	.....	1	1	.....	.....	6	2	.....	.....	6	2
	No. 2.....	2	1	1	.....	.....	.....	.....	2	1	.....	.....	3	1
	No. 3.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 4.....	2	.....	3	.....	.....	.....	.....	2	.....	.....	.....	5	.....
II.....	No. 5.....	2	1	.....	.....	.....	.....	.....	2	1	.....	.....	2	1
	No. 6.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.....	1	1	.....	1	1	.....	.....	.....	2	.....	.....	7	2
	No. 8.....	5	.....	.....	.....	.....	.....	.....	6	2	.....	.....	.....	.....
III.....	No. 9.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 10.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
	No. 11.....	4	1	1	.....	.....	.....	.....	4	1	.....	.....	4	.....
	No. 12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....
	No. 13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....	22	5	9	.....	2	2	.....	.....	24	7	.....	.....	33	7

## REMARKS:

Cases confirmed as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Typhoid carrier—None.

33  
0

0

7

1

0

0

25

19

5

DYSENTERIES REPORTED DURING THE MONTH OF APRIL, 1927, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female		Cases	Deaths	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths			
I.	No. 1.	1	...	2	...	3	3	3	3	4	3	3	3	7	6
	No. 2.	2	...	2	...	2	2	1	1	4	4	1	1	5	5
	No. 3.	1	...	...	...	...	...	...	...	...	...	...	...	...	...
	No. 4.	2	...	...	...	2	2	2	2	4	2	2	2	6	4
II.	No. 5.	1	...	...	...	1	1	...	...	2	1	2	...	4	1
	No. 6.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	No. 7.	1	1	2	...	2	2	1	1	3	3	3	1	6	4
	No. 8.	...	...	...	...	...	...	...	...	2	...	...	...	2	...
III.	No. 9.	1	...	...	...	1	...	...	...	...	...	...	...	...	...
	No. 10.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	No. 11.	2	1	...	...	...	...	1	1	2	1	2	1	4	2
	No. 12.	1	...	...	...	...	...	1	1	1	...	1	...	2	1
Total.	No. 13.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	No. 14.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total.	12	4	5	...	11	10	9	9	23	14	14	9	37	23	

REMARKS:

Amebic dysentery..... 3  
 Bacillary dysentery..... 18  
 Unspecified..... 16  
 Cases reported among nonresident persons not included in the table..... 9  
 Deaths reported among nonresident persons not included in the table..... 2

Dysentery carrier—None.

## CHOLERA REPORTED DURING THE MONTH OF APRIL, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. ....	No. 1.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 2.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 3.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 4.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
II. ....	No. 5.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 6.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 7.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 8.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 9.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 10.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
III. ....	No. 11.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 12.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 13.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	No. 14.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

## REMARKS:

No nonresident case was reported during the month.

Cholera carrier—5.

DIPHTHERIA REPORTED DURING THE MONTH OF APRIL, 1927, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths
I.....	No. 1.....	1											1						1	
	No. 2.....																			
	No. 3.....																			
	No. 4.....			1												1			1	
II.....	No. 5.....																			
	No. 6.....																			
	No. 7.....	1	1							2									3	1
	No. 8.....												1			2				
III.....	No. 9.....																			
	No. 10.....	1											1						1	
	No. 11.....																			
	No. 12.....																			
	No. 13.....																			
	No. 14.....																			
Grand total.....		3	1	3									3	1	3				6	1

REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—None.

2  
0

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF APRIL, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	27	2	3	1
Varicella.....	10	6		
Varioloid.....				
Smallpox.....				
Measles.....	10	13	1	1
Whooping cough.....				
Influenza.....	18	5	4	
Bubonic plague.....				
Encephalitis lethargica.....	1		1	
Meningitis cerebrospinal epidemic.....	1		1	
Tuberculosis of the respiratory organs.....	123	124	74	72
Tuberculosis of other organs.....	9	9	9	6
Beriberi, infantile.....	13	6	11	2
Beriberi, adult.....	1	15		3

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	39	6	1	1
Varicella.....	3			
Varioloid.....				
Smallpox.....				
Measles.....	2	1		
Whooping cough.....				
Influenza.....	5	3	4	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....		1		1
Tuberculosis of the respiratory organs.....	36	6	12	
Tuberculosis of other organs.....	1	1	1	1
Beriberi, infantile.....	2		2	
Beriberi, adult.....	2	2	2	

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES FOR  
THE MONTH OF APRIL, 1927**

Sera and vaccines	On hand April 1, 1927	Received during the month	Total to be accounted for	Distrib- uted during the month	Remain- ing at the end of the month
Antidiphtheric serum (units).....	470,000	1,000,000	1,470,000	400,000	1,070,000
Antidysenteric serum (ampoules).....	191	200	391	190	201
Antitetanic serum (units).....	600,000	506,000	1,106,000	506,000	600,000
Cholera vaccine (c.c.).....	90,080		90,080	74,420	15,660
Dried vaccine virus (units).....	94,200	100,000	194,200	94,500	99,700
Fresh vaccine virus (units).....	259,800	200,000	459,800	139,100	320,700
Gonococcus vaccine (ampoules).....		200	200	200	
Mixed typhoid cholera vaccine (c.c.).....	80,520	102,050	182,570	121,790	60,780
Normal Horse serum (ampoules).....					
Streptococcus vaccine (ampoules).....					
Typhoid vaccine (c.c.).....	16,620	12,000	28,620	21,660	6,960



REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF APRIL, 1927

229

Health districts	Municipal districts	Vaccinations				Inspections of persons vaccinated						Total	
		Total vaccinations	Previously vaccinated		Unsuccessful	Under 1 year		1 to 4 years		5 years and over			
			Never	Successfully		Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
No. 1.	Tondo.....	313	278	5	30	281	9	25	4	11	2	317	15
	San Nicolas.....	64	62		2	57	1	3		1	1	61	2
	Binondo.....	1,796	178	1,496	122	66	15	6		133	843	205	858
	Santa Cruz.....	866	164	649	62	181	10	29	20	168	186	378	216
	Quisapo.....	43	37		6	36						36	
No. 2.	San Miguel.....	20	16	1	3	23						23	
	Sampaloc.....	252	179	30	43	151	41	8	1			159	42
	Port Area.....												
	Intramuros.....	233	84	115	34	54	14	13	2	11	2	78	18
No. 3.	Eremita.....	137	128		9	101	11					101	11
	Malate.....	111	97		14	104	12	3				107	12
	Paco.....	28	26		2	49	5					49	5
	Pandacan.....	39	29		10	39	9					39	9
	Santa Ana.....	94	63		31	81	35					81	35
Total.....		3,995	1,941	2,296	358	1,223	162	87	27	324	1,034	1,634	1,223

Vaccine virus:	
Remaining from last month.....	8,650
Received.....	7,500
Used.....	7,150
Remained.....	9,000

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF APRIL, 1927**

	Health districts	Municipal districts	Number of injections made in—				Total number of injections	
			Adults		Children		First	Second
			First injections	Second injections	First injections	Second injections		
No. 1.		Tondo.....	39	13	19	6	58	19
		San Nicolas.....	5	8	5	9	10	17
		Binondo.....						
		Santa Cruz.....	27	15	26	9	53	24
No. 2.		Quiapo.....						
		San Miguel.....						
		Sampaloc.....	19	11	8	16	27	27
		Port Area.....						
No. 3.		Intramuros.....						
		Ermita.....						
		Malate.....	5	4			5	4
		Paco.....	4				4	
		Pandacan.....						
		Santa Ana.....						
		Total.....	99	51	58	40	157	91

Health districts	Municipal districts	Number of injections made in—												Total number of injections						
		Adults						Children												
		First injections		Second injections		Third injections		First injections		Second injections		Third injections								
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	
No. 1.	Tondo	2012			1,422		1,265	12	1,190		8	380	9	690	12	3,202	8	2,302	9	1,955
	San Nicolas	896			670		781		264			216	1	297		1,160		886	1	1,078
	Binondo	1,262			820		361		156			137		75		1,418		967		1,436
	Santa Cruz	1,684			1,096		691		355			306		439		2,039		1,402		1,180
	Quiapo	435			289		338		87			86		61		522		375		899
No. 2.	San Miguel	516			336				59			27				575		363		
	Sampaloc	1,168			827		595		375			307		292		1,543		1,184		887
	Port Area																			
	Intramuros	568			529		498	7	843	2	343	2	350		7	911	2	872	2	848
	Ermita	631			819		1,368		80			33		42		711		852		1,410
No. 3.	Malate	54			27		20		33			26		32		87		63		52
	Paco	311			298		262		257			286		263		588		584		525
	Pandacan	256			180		91		300			216		107		556		396		198
	Santa Ana	39			12		45		37			20		43		76		32		88
	Total		9,832		7,325		6,315	19	3,536	10	2,883	12	2,691		19	13,868	10	10,208	12	9,006

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	3,812	670	842	1,800
Agusan.....	2,223	608	523	1,092
Albay.....	30,088	5,882	5,233	18,973
Antique.....	5,253	1,464	2,239	1,550
Bataan.....	5,758	2,235	1,688	1,835
Batanes.....	222	26	14	102
Batangas.....	17,555	5,651	3,269	8,635
Bohol.....	5,423	1,613	1,658	2,152
Bukidnon.....	2,001	646	308	1,047
Bulacan.....	8,049	3,074	2,424	2,551
Cagayan.....	15,041	3,596	4,240	7,205
Camarines Norte.....	9,591	1,752	4,906	2,933
Camarines Sur.....	10,872	2,353	3,971	4,548
Capiz.....	13,207	3,301	5,843	4,063
Catanduanes.....	3,972	962	974	2,036
Cavite.....	7,983	1,645	3,478	2,860
Cebu.....	30,416	9,256	4,839	16,321
Cotabato.....	10,745	3,368	3,429	3,948
Davao.....	10,185	3,691	3,704	2,790
Ilocos Norte.....	12,559	2,700	3,789	6,070
Ilocos Sur.....	6,222	1,821	653	3,748
Iloilo.....	39,632	10,077	23,113	6,442
Isabela.....	18,967	4,676	11,434	2,857
Laguna.....	10,649	2,478	4,686	3,485
Lanao.....	19,653	5,135	10,769	3,749
La Union.....	8,351	1,731	225	6,395
Leyte.....	10,425	3,053	1,859	5,503
Marinduque.....	32,705	2,486	22,956	7,263
Masbate.....	3,286	1,209	570	1,507
Mindoro.....	715	188	200	327
Misamis.....	5,063	1,340	783	2,940
Mountain Province.....	8,946	1,212	7,066	668
Nueva Ecija.....	11,147	4,571	2,224	4,352
Nueva Vizcaya.....	1,195	471	118	606
Occidental Negros.....	32,371	12,018	12,826	7,527
Oriental Negros.....	12,206	3,834	3,684	4,688
Palawan.....	.....	.....	.....	.....
Pampanga.....	16,940	4,267	7,093	5,580
Pangasinan.....	17,914	6,811	2,260	8,843
Rizal.....	36,334	5,934	28,803	1,597
Romblon.....	24,406	4,291	15,087	5,028
Samar.....	15,828	2,924	5,131	7,773
Sorsogon.....	6,547	2,881	285	3,381
Sulu.....	3,606	2,002	415	1,189
Surigao.....	1,988	975	227	786
Tarlac.....	10,181	2,567	5,462	2,152
Tayabas.....	12,368	5,196	2,194	4,978
Zambales.....	3,830	1,516	694	1,620
Zamboanga.....	4,297	1,210	723	2,864
<b>Total.....</b>	<b>580,227</b>	<b>151,367</b>	<b>228,921</b>	<b>199,939</b>

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	263	166	548	538	563	885	1,374	1,589
Agusan.....	111	144	123	94	294	154	528	392
Albay.....	2,671	749	4,308	1,001	6,740	2,762	13,719	4,512
Antique.....	428	143	487	366	292	456	1,207	965
Bataan.....	1,169	253	1,593	612	1,149	398	3,911	1,263
Batanes.....	20	16	19	21	37	66	76	103
Batangas.....	2,700	773	3,684	1,518	3,316	2,537	9,700	4,828
Bohol.....	668	185	1,011	424	1,320	1,154	2,999	1,763
Bukidnon.....	41	73	140	212	382	805	563	1,090
Bulacan.....	3,012	549	1,857	831	1,579	1,011	6,448	2,891
Cagayan.....	1,517	255	2,161	382	3,245	2,204	6,923	2,841
Camarines Norte.....	804	146	1,440	316	2,948	1,436	5,192	1,898
Camarines Sur.....	1,577	571	1,387	588	3,759	2,198	6,723	3,857
Capiz.....	1,018	238	1,514	542	4,594	1,698	7,126	2,478
Catanduanes.....	460	269	479	322	473	400	1,412	991
Cavite.....	1,504	184	1,349	397	2,918	1,604	5,771	2,185
Cebu.....	2,587	969	2,704	962	2,976	3,159	8,267	5,090
Cotabato.....	254	216	590	609	2,234	1,943	3,078	2,768
Davao.....	252	129	743	386	3,457	1,820	4,452	2,385
Ilocos Norte.....	1,640	531	2,590	881	2,631	2,888	6,861	4,300
Ilocos Sur.....	849	248	1,040	383	1,097	1,154	2,986	1,785
Iloilo.....	2,355	306	4,991	1,370	10,643	8,721	17,989	10,397
Isabela.....	752	311	1,994	487	5,268	4,692	8,014	5,490
Laguna.....	1,352	187	1,523	569	3,023	2,989	5,898	3,745
Lanao.....	332	85	1,438	402	5,442	3,147	7,272	3,634
La Union.....	1,096	261	1,268	938	977	1,538	3,341	2,737
Leyte.....	400	165	1,200	450	2,353	1,069	3,953	1,684
Marinduque.....	625	119	1,928	473	12,115	4,776	14,668	5,368
Masbate.....	390	147	514	211	916	401	1,820	759
Mindoro.....	149	63	36	17	246	141	431	221
Misamis.....	214	88	511	180	906	544	1,631	812
Mountain Province.....	389	31	1,573	295	3,721	2,858	5,683	3,184
Nueva Ecija.....	2,026	518	2,706	1,090	1,762	1,681	6,494	3,289
Nueva Vizcaya.....	218	114	121	138	160	375	499	627
Occidental Negros.....	2,376	469	3,471	880	5,412	3,663	11,259	5,012
Oriental Negros.....	1,670	485	1,511	721	3,453	1,633	6,634	2,839
Palawan.....								
Pampanga.....	1,844	244	1,136	324	2,443	2,140	4,923	2,708
Pangasinan.....	3,095	641	3,900	1,222	3,032	2,514	10,027	4,377
Rizal.....	2,007	349	3,598	1,254	7,687	12,775	13,292	14,378
Romblon.....	511	86	2,473	782	8,831	7,136	11,315	8,004
Samar.....	795	350	1,437	972	2,893	2,079	4,625	3,401
Sorsogon.....	688	308	1,218	652	1,622	966	3,528	1,926
Sulu.....	205	87	452	197	1,000	634	1,657	918
Surigao.....	256	102	425	131	518	272	1,199	505
Tarlac.....	1,249	395	1,931	1,068	1,950	2,618	5,130	4,081
Tayabas.....	1,975	304	3,008	616	4,085	1,575	9,068	2,495
Zambales.....	780	180	860	356	686	775	2,326	1,311
Zamboanga.....	203	374	853	789	508	1,229	1,064	2,392
Total.....	51,057	13,576	75,343	27,969	136,656	103,673	268,056	145,218

<sup>1</sup> Incomplete; reports from other provinces not yet received.

NOTE.—Vaccinations performed by the Vaccinating Parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	11,420	4,515		15,935
Antique.....	8,641	5,058		13,699
Bataan.....	1,667			1,667
Batangas.....	5,435			5,435
Bulacan.....	44,296	78		44,374
Camarines Norte.....	1,841	10		1,851
Camarines Sur.....	7,710	45		7,755
Capiz.....	9,051	2,688		11,739
Catanduanes.....	102			102
Cavite.....	386			386
Cebu.....	57			57
Ilocos Norte.....	5,014	1,761		6,775
Iloilo.....	18,081	3,456		21,537
Isabela.....	6			6
Laguna.....	660	68		728
Leyte.....	3,928	1,575		5,503
Marinduque.....	502			502
Nueva Ecija.....	123	33		156
Pampanga.....	38,063	4,759		42,822
Pangasinan.....	3,916	2,375		6,291
Risal.....	4,192	393		4,585
Romblon.....	448			448
Sorsogon.....	1,378	90		1,468
Tarlac.....	3,608	647		4,255
<b>Total.....</b>	<b>170,475</b>	<b>27,551</b>		<b>198,026</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>2</sup>**

Provinces	First injection	Second injection	Third injection	Total
Albay.....	71	56	17	144
Batangas.....	37	34	29	100
Bulacan.....	1,250	678	432	2,360
Camarines Sur.....	97	19		116
Catanduanes.....	7	6		13
Iloilo.....	1,979	933	357	3,269
Laguna.....	1,498	833	594	2,925
La Union.....	267	242	244	753
Nueva Ecija.....	150	126	39	315
Pampanga.....	846	1,001	555	2,402
Pangasinan.....	1,493	1,212	860	3,565
Risal.....	1,526	486	56	2,068
Samar.....	2			2
Tarlac.....	484	211		695
<b>Total.....</b>	<b>9,707</b>	<b>5,837</b>	<b>3,183</b>	<b>18,727</b>

<sup>2</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	4,488	1,299		5,787
Bataan.....	816	597		1,413
Batangas.....	1,424	439		1,863
Bulacan.....	1,251	522		1,773
Bohol.....	1,031	886		1,917
Cagayan.....	1,068	493		1,561
Camarines Norte.....	220	119		339
Camarines Sur.....	844	312		1,156
Cavite.....	16,897	15,444		32,341
Cebu.....	7,120	629		7,749
Cotabato.....	307			307
Davao.....	639	473		1,112
Ilocos Norte.....	38	96		134
Ilocos Sur.....	1,293	1,249		2,542
Iloilo.....	3,750	2,461		6,211
Isabela.....	63	56		119
Laguna.....	5			5
Lanao.....	1,420	793		2,213
La Union.....	2,886	1,789		4,675
Leyte.....	1,515	621		2,136
Masbate.....	1,091	225		1,316
Misamis.....	1,439	571		2,010
Nueva Ecija.....	2,759	1,090		3,849
Nueva Vizcaya.....	1,033	688		1,721
Occidental Negros.....	38,508	20,953		59,461
Oriental Negros.....	1,972	1,311		3,283
Pampanga.....	13,332	10,026		23,358
Pangasinan.....	29			29
Rizal.....	26,149	13,427		39,576
Samar.....	549	125		674
Surigao.....	403	308		711
Tarlac.....	2,958	666		3,624
Tayabas.....	6,234	3,076		9,310
Zambales.....	2,578	2,352		4,930
Zamboanga.....	2,505	1,046		3,551
Total.....	148,614	84,142		232,756

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF APRIL, 1927**

(No case and no death reported during the month)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF APRIL, 1927.**

(No case and no death reported during the month)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF APRIL, 1927**

Sanitary orders	Health districts			Total
	No. 1 Meisic	No. 2 Sampaloc	No. 3 Paco	
<b>Orders pending, April 1, 1927:</b>				
Minor .....	131	158	63	352
Sewer .....	24	49	1	74
Vacating .....	8	11		19
Filling .....	9	35	17	61
<b>Total .....</b>	<b>172</b>	<b>253</b>	<b>81</b>	<b>506</b>
<b>Orders issued during the month:</b>				
Minor .....	15	4	4	23
Sewer .....	1			1
Vacating .....				
Filling .....				
<b>Total .....</b>	<b>16</b>	<b>4</b>	<b>4</b>	<b>24</b>
<b>Orders completed during the month:</b>				
Minor .....	10	13	4	27
Sewer .....		1		1
Vacating .....				
Filling .....				
<b>Total .....</b>	<b>10</b>	<b>14</b>	<b>4</b>	<b>28</b>
<b>Orders cancelled during the month:</b>				
Minor .....		2		2
Sewer .....				
Vacating .....				
Filling .....				
<b>Total .....</b>		<b>2</b>		<b>2</b>
<b>Orders pending, April 30, 1927:</b>				
Minor .....	136	147	63	346
Sewer .....	25	48	1	74
Vacating .....	8	11		19
Filling .....	9	35	17	61
<b>Total .....</b>	<b>178</b>	<b>241</b>	<b>81</b>	<b>500</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations, .....	34	55	50	139
<b>Permits for minor building constructions:</b>				
Approved .....	37	37	28	102
Disapproved .....	7	5	6	18
<b>New buildings completed .....</b>	<b>5</b>	<b>26</b>	<b>20</b>	<b>51</b>
<b>Permits for light and mixed material constructions:</b>				
Approved .....	12	21	16	49
Disapproved .....	1	8	3	12
<b>Prosecutions:</b>				
Convictions .....				
Dismissals .....	2	10		12
Amount of fines .....				
<b>Plumbing permits issued .....</b>	<b>55</b>	<b>74</b>	<b>41</b>	<b>170</b>
<b>Plumbing projects completed .....</b>	<b>30</b>	<b>65</b>	<b>50</b>	<b>145</b>
<b>Premises connected to the sanitary sewer to March 31, 1927. ....</b>	<b>2,506</b>	<b>4,288</b>	<b>683</b>	<b>7,477</b>
Connected during the month .....	2	7	19	28
<b>Total .....</b>	<b>2,508</b>	<b>4,295</b>	<b>702</b>	<b>7,505</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

MAY, 1927

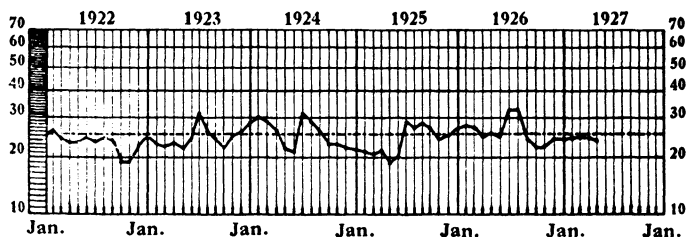
No. 5

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand to mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1927

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Statistics for the month.....	239
238	

# MONTHLY BULLETIN

## OF THE

# PHILIPPINE HEALTH SERVICE

VOL. VII

MAY, 1927

No. 5

## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of May, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1927<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	294,137
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I. MEISIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,538</b>
<b>No. II. SAMPALOC:</b>	
4. Santa Cruz.....	52,238
5. Quiapo.....	15,862
6. San Miguel.....	4,484
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,232</b>
<b>No. III. PACO:</b>	
8. Port Area.....	4,816
9. Inframuros.....	14,625
10. Ermita.....	16,139
11. Malate.....	16,471
12. Paco.....	16,037
13. Pandacan.....	5,861
14. Santa Ana.....	6,675
<b>Total.....</b>	<b>80,624</b>
<b>Grand total.....</b>	<b>320,394</b>

# METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED FROM HOURLY OBSERVATIONS, MAY, 1927

Date	Temperature							
	Pressure mean <sup>1</sup>	In shade <sup>2</sup>				Underground		
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	758.47	29.2	36.0	1	23.8	5	31.2	81.4
11-20.....	59.86	29.2	36.8	15	23.5	19	31.6	31.8
21-31.....	54.83	26.9	34.9	21	23.6	26	30.4	30.4

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity,—1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	78.6	78.9	8	70.1	6
11-20.....	78.4	79.6	20	66.4	14
21-31.....	85.4	92.8	30	76.9	21

Date	Wind				Atmidometer <sup>2</sup> (open air)		
	Prevailing direction	Velocity		Day	Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum				
		Kms.	Kms.		mm.	mm.	
1-10.....	E quad.	1,715.0	232.0	5	55.3	6.4	5
11-20.....	E quad.	1,719.0	272.0	17	52.1	8.1	14
21-31.....	S quad.	3,076.0	745.0	26	20.8	4.7	21

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	79 20	10 15	2	9.9	1
11-20.....	80 25	11 00	14	23.2	4
21-31.....	25 00	7 25	21	238.4	10

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

# NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	5	3	8	30.07
Filipinos.....	517	165	982	39.83
Spaniards.....	3	1	4	24.11
Other Europeans.....	2	3	5	52.32
Chinese.....	19	17	36	28.75
All others.....	3	2	5	26.95
Total and average.....	549	491	1,040	38.24

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MABIC:</b>							
1. Tondo.....	132	118	250	7	11	18	268
2. San Nicolas.....	45	41	86	1	1	2	88
3. Binondo.....	22	15	37	.....	1	1	38
Total.....	199	174	373	8	13	21	394
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	67	49	116	7	2	9	125
5. Quiapo.....	23	22	45	.....	.....	.....	45
6. San Miguel.....	2	4	6	.....	.....	.....	6
7. Sampaloc.....	80	94	174	6	5	11	185
Total.....	172	169	341	13	7	20	361
<b>No. III, PACO:</b>							
8. Port Area.....	.....	.....	.....	.....	.....	.....	.....
9. Intramuros.....	23	20	43	1	1	2	45
10. Ermita.....	32	16	48	1	2	3	51
11. Malate.....	53	38	91	2	.....	2	98
12. Paco.....	29	30	59	1	3	4	63
13. Pandacan.....	5	11	16	.....	1	1	17
14. Santa Ana.....	9	5	14	1	1	2	16
Total.....	151	120	271	6	8	14	285
Grand total.....	522	463	985	27	28	55	1,040

Attended by physicians, living, 282; stillbirths, 16.

Attended by midwives, living 61; stillbirths, 0.

Attended by families, living 697; stillbirths 27.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA

BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	2	.....	2	7.52
Filipinos.....	329	296	625	25.03
Spaniards.....	3	3	6	36.16
Other Europeans.....	.....	.....	.....	.....
Chinese.....	16	4	20	13.20
All others.....	1	2	3	16.17
Total and average.....	351	305	656	24.12

## NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEISIC:</b>			
1. Tondo.....	107	109	216
2. San Nicolas.....	25	21	46
3. Binondo.....	13	7	20
Total.....	145	137	282
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	69	49	118
5. Quiapo.....	15	13	28
6. San Miguel.....	3	4	7
7. Sampaloc.....	52	44	96
Total.....	139	110	249
<b>No. III, PACO:</b>			
8. Port Area.....		1	1
9. Intramuros.....	9	8	17
10. Ermita.....	12	8	20
11. Malate.....	20	22	42
12. Paco.....	12	9	21
13. Pandacan.....	6	6	12
14. Santa Ana.....	8	4	12
Total.....	67	58	125
Grand total.....	351	305	656

## NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	107	92
Divorced.....		
Widowed.....	37	53
Single.....	266	214
Conditions not stated.....	1	
Total.....	411	359
Grand total.....	770	

Stillbirths.....	43
Number of deaths with medical attendance.....	567
Number of deaths without medical attendance.....	268

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year .....	88	79	10	6	183
1 year plus .....	36	39	4	5	84
2 years plus .....	16	16	2	3	37
3 years plus .....	7	5	1	.....	13
4 years plus .....	8	6	1	3	18
5 to 9 years .....	12	10	2	2	26
10 to 14 years .....	4	6	3	4	17
15 to 19 years .....	20	9	5	2	36
20 to 24 years .....	20	18	6	3	42
25 to 29 years .....	14	18	5	7	44
30 to 34 years .....	15	11	2	4	32
35 to 39 years .....	15	17	1	2	35
40 to 44 years .....	8	4	1	4	17
45 to 49 years .....	17	14	1	2	34
50 to 54 years .....	13	5	5	.....	23
55 to 59 years .....	10	9	3	.....	22
60 to 64 years .....	14	5	2	3	24
65 to 69 years .....	6	7	1	1	15
70 to 74 years .....	10	14	1	.....	25
75 to 79 years .....	6	4	3	.....	13
80 to 84 years .....	9	5	.....	1	15
85 to 89 years .....	.....	2	1	.....	3
90 to 94 years .....	2	3	.....	.....	5
95 to 99 years .....	1	3	.....	1	5
100 years and over .....	.....	1	.....	1	2
Age not stated .....	.....	.....	.....	.....	.....
Total .....	351	305	60	54	770









128-142	128	Acute nephritis (including unspecified under 10 years of age).....	4	3	1	1	8
	129	Chronic nephritis (including unspecified 10 years and over).....	9	13	1	1	24
	130	Calculi of the urinary passages.....	1				1
	137	Cysts and other benign tumors of the ovary.....		2			2
	138	Salpingitis and pelvic abscess (female).....		1		1	2
143-150		<i>VIII. The puerperal state</i>					
	144	Puerperal hemorrhage.....		3			3
	146	Puerperal septicæmia.....		4			4
	148	Puerperal albuminuria and convulsions.....		2			2
151-154		<i>IX. Diseases of the skin and of the cellular tissue</i>					
	151	Gangrene.....	1	1			2
	152	Furuncle.....	1			1	3
	153	Acute abscess.....	1	1			2
	154	Other diseases of the skin and annexa.....	2				2
159-		<i>XI. Malformations</i>					
	159	Congenital malformations (stillbirths not included):		1			1
		c. Others under this title.....					
160-163		<i>XII. Early infancy</i>					
	160	Congenital debility, icterus, and sclerema.....	18	13			31
	161	Premature birth; Injury at birth:					
		a. Premature birth (not stillborn).....	3	5			8
	162	Other diseases peculiar to early infancy.....	9	9	1		19
164-		<i>XIII. Old age</i>					
	164	Senility.....	11	14			25
165-203		<i>XIV. External causes</i>					
	179	Accidental burns (conflagration excepted).....		2			2
	182	Accidental drowning.....	1				1
	185	Accidental traumatism by fall.....		2			2
	187	Accidental traumatism by machines.....	1				1
	188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):					
		a. Railroad accidents.....	1				2
		b. Street-car accidents.....		1			1
		c. Automobile accidents.....		1			1
198		Homicide by cutting or piercing instruments.....					
		Total.....	2	329	296	3	656
		Grand total.....	2	625	6	20	656



1 V. Diseases of the circulatory system

87-96	87	Pericarditis.....	1	1	1	1
	88	Endocarditis and myocarditis (acute).....	2	2	2	2
	90	Other diseases of the heart.....	2	2	2	2
97-100		V. Diseases of the respiratory system				
	99	Bronchitis:				
		a. Acute.....	2			2
	100	Bronchopneumonia:				
		a. Bronchopneumonia.....	4	8	1	14
		b. Capillary bronchitis.....	1			1
	101	Pneumonia:				
		a. Lobar.....	1	4	2	7
	102	Pleurisy.....	1	1	1	1
108-127		VI. Diseases of the digestive system				
	109	Diseases of the pharynx and tonsils (including adenoid vegetations):				
		a. Others under this title.....	1			1
	112	Other diseases of the stomach (cancer excepted).....	1			1
	113	Diarrhea and enteritis (under 2 years of age).....	1	2		3
	114	Diarrhea and enteritis (2 years and over).....	1			1
	117	Appendicitis and typhlitis.....	2	1		3
	118	Hernia, intestinal obstruction:				
		a. Hernia.....	1			1
	124	Other diseases of the liver.....	2	1	1	4
	126	Peritonitis without specified cause.....	1			1
128-142		VII. Noncervical diseases of the genito-urinary system and annexa				
	128	Acute nephritis (including unspecified under 10 years of age).....	3			3
	129	Chronic nephritis (including unspecified 10 years and over).....	2			2
	139	Benign tumors of the uterus.....	1			1
143-150		VIII. The puerperal state				
	143	Accidents of pregnancy:				
		c. Others under this title.....	1			1
	144	Puerperal hemorrhage.....	1			1
155-158		X. Diseases of the bones and of the organs of locomotion				
	158	Other diseases of the organs of locomotion.....	1			1
160-163		XII. Early infancy				
160		Congenital debility, icterus, and sclerema.....	2			2

## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
164-														
164	Senility.....			1	2									3
165-203	XIII. Old age													
	XIV External causes													
166	Suicide by corrosive substances.....			1										1
184	Accidental traumatism by cutting or piercing instruments.....			1										1
185	Accidental traumatism by fall.....				1									1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	c. Automobile accidents.....	2		1										3
189	Injuries by animals (not poisoning).....	1		1										1
198	Homicide by cutting or piercing instruments.....	1		1						1				3
204-205	XV. Ill-defined diseases													
205	Cause of death not specified or ill-defined:													
	a. Ill-defined.....													
	Total.....													1
	Grand total.....	2	2	56	51					4		1		114
				107						4		1		114

## INFANT MORTALITY

Causes of death	Under 2 hours	24 hours to under 36 hours	36 hours to under 8 days	18 hours to under 14 days	14 days to under 1 year	Total
7. Measles.....					1	1
9. Whooping-cough.....					1	1
10. Diphtheria.....					1	1
16. Dysentery:						
a. Amebic.....					1	1
c. Unspecified or due to other causes.....					1	1
21. Erysipelas.....					1	1
29. Tetanus:						
a. Umbilical.....				3		3
31. Tuberculosis of the respiratory system.....					2	2
32. Tuberculosis of the meninges and central nervous system.....					2	2
37. Disseminated tuberculosis:						
b. Chronic or unspecified.....					1	1
35. Beriberi.....		1		2	11	14
36. Rickets.....					2	2
71. Meningitis:						
a. Simple meningitis.....					4	4
80. Infantile convulsions.....					1	1
99. Bronchitis:						
a. Acute.....					19	19
b. Chronic.....					2	2
c. Unspecified.....					1	1
100. Bronchopneumonia:						
a. Bronchopneumonia.....					36	36
b. Capillary bronchitis.....					1	1
101. Pneumonia:						
a. Lobar.....					2	2
112. Other diseases of the stomach (cancer excepted).....					2	2
113. Diarrhea and enteritis.....					19	19
124. Other diseases of the liver.....					1	1
128. Acute nephritis.....					2	2
134. Other diseases of the skin and annexe.....					2	2
139. Congenital malformations (stillbirths not included):						
c. Others under this title.....					1	1
160. Congenital debility, icterus, and sclerema.....	4	3		14	12	33
161. Premature birth; Injury at birth:						
a. Premature birth (not still-born).....	6	1		1		8
162. Other diseases peculiar to early infancy.....	11			7	1	19
Total.....	21	5		27	130	183

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set.....	22,134
Number of rats caught by spring traps.....	3,003
Number of cage wire traps set.....	684
Number of rats caught by cage wire traps.....	0
Number and kind of baits (coconuts).....	23,490
Number of poison portions placed.....	19,462
Number of rats found poisoned.....	339
Number of rats killed by clubs and other weapons.....	940
Number of rats found dead from other causes.....	571
Total number of rats otherwise caught, found dead or killed.....	4,853
Total number of rats sent to the laboratory for examination.....	4,853
Total number of rats found positive for plague.....	0

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF MAY, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total			
	Male		Female		Male		Female		Male		Female					
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths				
I.	No. 1.	4	3						1	1	4	3	1	1	5	4
	No. 2.	1			1					2	1			2	2	
	No. 3.				1				1		7		1		8	1
	No. 4.	7														
II.	No. 5.															
	No. 6.	1	1							1	1	1	1		1	1
	No. 7.	1	2	1						1	1	2	1		2	2
	No. 8.															
III.	No. 9.	2									2				2	
	No. 10.	3									3				3	
	No. 11.	2	1		1					2	2	1	1	1	3	1
	No. 12.	2				1				2				1	1	
	No. 13.															
	No. 14.															
Grand total.....	23	7	4	1	2	.....	2	1	25	7	6	2	31		9	9

**REMARKS:**

Cases confirmed as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among non-resident persons not included in the table.....

Deaths reported among non-resident persons not included in the table.....

Typhoid carrier—None.

30

1

"

0

2

0

3

26

11

1





**CHOLERA REPORTED DURING THE MONTH OF MAY, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital						Home				Total				Grand total	
	Male			Female			Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I..	No. 1.															
	No. 2.															
	No. 3.															
	No. 4.															
II..	No. 5.															
	No. 6.															
	No. 7.															
	No. 8.															
	No. 9.															
	No. 10.															
III.	No. 11.															
	No. 12.															
	No. 13.															
	No. 14.															
Grand total																

**REMARKS:**

No non-resident case was reported during the month.

Cholera carrier—10.

## DIPHTHERIA REPORTED DURING THE MONTH OF MAY, 1927. CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total			
	Male		Female		Male		Female		Male		Female		Male		Female	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.....			2								2				2	
{ No. 1.....																
{ No. 2.....			1								1				1	
{ No. 3.....																
{ No. 4.....																
{ No. 5.....																
II.....	2								2						2	
{ No. 6.....																
{ No. 7.....																
{ No. 8.....			1								1				1	
{ No. 9.....																
{ No. 10.....																
{ No. 11.....																
{ No. 12.....			1								1				1	
{ No. 13.....																
{ No. 14.....																
Grand total.....	2		5						2		5				7	

## REMARKS:

Cases reported among non-resident persons not included in the table.....

Deaths reported among non-resident persons not included in the table.....

Diphtheria carrier—4.

F

2

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF MAY, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	22	5	3	
Varicella.....	2	2		
Varioloid.....				
Smallpox.....				
Measles.....	7	9	1	
Whooping cough.....	1		1	
Influenza.....	18	7	5	1
Bubonic plague.....				
Encephalitis lethargica.....	1		1	
Meningitis cerebrospinal epidemic.....		1		
Tuberculosis of the respiratory organs.....	157	144	75	61
Tuberculosis of other organs.....	9	9	8	8
Beriberi, infantile.....	12	9	9	5
Beriberi, adults.....	1	13	1	

**NON RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	28	6		1
Varicella.....	5			
Varioloid.....				
Smallpox.....				
Measles.....		3		
Whooping cough.....				
Influenza.....	3	3		1
Bubonic plague.....				
Encephalitis lethargica.....		1		1
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	34	26	8	6
Tuberculosis of other organs.....	2	1	2	1
Beriberi, infantile.....				
Beriberi, adults.....				

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINE  
FOR THE MONTH OF MAY, 1927**

Sera and vaccines	On hand May 1, 1927	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of the month
Anti-diphtheric serum (units).....	1,070,000		1,070,000	200,000	870,000
Anti-dysenteric serum (ampoules).....	201	400	601	440	161
Anti-tetanic serum (units).....	600,000	561,000	1,161,000	461,000	700,000
Cholera vaccine (c.c.).....	15,660	180,000	195,660	132,360	63,300
Dried vaccine virus (units).....	99,700	100,000	199,700	81,800	117,900
Fresh vaccine virus (units).....	320,700	100,000	420,700	155,400	265,300
Gonococcus vaccine (ampoules).....		100	100	100	
Mixed typhoid-cholera vaccine (c.c.).....	60,780	120,000	180,780	108,400	72,380
Normal horse serum (ampoules).....					
Streptococcus vaccine (ampoules).....					
Typhoid vaccine (c.c.).....	6,960	24,000	30,960	24,960	6,000

## REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF MAY, 1927

Health districts	Municipal districts	Vaccinations		Inspections of persons vaccinated						Total			
		Total vaccinations	Previously vaccinated		Under 1 year		5 years and over						
			Never	Successfully	Unsuccessfully	Positive	Negative	Positive	Negative				
No. 1.	Tondo.	266	212	...	24	244	23	7	8	251	31		
	San Nicolas.	595	64	521	10	56	5	3	...	59	5		
	Binondo.	7,240	21	7,212	6	21	3	5	...	26	3		
	Santa Cruz.	966	203	711	52	130	30	14	290	113	434		
	Quiapo.	30	25	...	5	27	1	1	...	28	1		
No. 2.	San Miguel.	24	20	1	3	10	10	4	1	14	1		
	Sampaloc.	173	157	...	16	140	10	5	2	145	12		
	Port Area.	2,424	123	2,220	81	75	13	...	...	75	13		
	Intramuros.	123	92	...	31	110	33	1	...	111	33		
No. 3.	Ermita.	61	57	...	7	57	8	...	...	57	8		
	Malate.	71	30	3	38	19	7	6	1	22	78		
	Paco.	20	12	...	8	13	8	...	...	13	8		
	Pandacan.	43	26	...	17	31	8	...	...	31	8		
	Santa Ana.	...	...	...	...	...	...	...	...	...	...		
Total.		12,039	1,073	10,668	298	933	149	46	20	312	191	1,291	369

## Vaccine virus:

Received .....  
 Used .....  
 Remained .....

21,150 units  
 12,450 units  
 8,700 units

**ANTITYPHOID AND ANTICHOLERA VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF MAY, 1917:**

Health districts	Municipal districts	Number of injections made in												Total number of injections					
		Adults						Children											
		First injections		Second injections		Third injections		First injections		Second injections		Third injections							
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1.....	Tondo.....	2,126	1,673	.....	1,515	31	1,400	13	1,235	9	912	31	3,526	13	2,908	9	2,427		
	San Nicolas.....	804	577	.....	502	2	165	1	75	.....	89	2	969	1	652	.....	591		
	Binondo.....	470	263	.....	589	.....	115	.....	100	.....	122	.....	585	.....	363	1	711		
No. 2.....	Santa Cruz.....	780	648	1	1,076	7	139	5	99	3	88	7	919	6	77	4	1,164		
	Quiapo.....	983	675	.....	338	2	548	3	372	2	279	2	1,531	3	1,047	2	615		
	San Miguel.....	525	476	.....	248	1	155	.....	125	.....	62	1	680	.....	601	.....	308		
No 3.....	Sampaloc.....	954	664	.....	682	.....	381	.....	322	.....	274	.....	1,335	.....	986	.....	956		
	Port Area.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Intramuros.....	54	59	.....	95	.....	22	.....	56	.....	53	.....	76	.....	115	.....	148		
	Ermita.....	655	522	.....	575	4	230	.....	166	.....	125	4	885	.....	688	.....	670		
	Malate.....	254	167	.....	128	.....	131	.....	108	.....	77	1	385	.....	275	.....	205		
	Paco.....	254	193	.....	278	.....	185	.....	155	.....	216	.....	439	.....	348	.....	494		
Total....	Pandacan.....	264	131	.....	112	.....	338	.....	260	.....	204	.....	602	.....	391	.....	316		
	Santa Ana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Total....	1	8,123	1	6,048	1	6,104	47	3,809	22	3,073	15	2,501	48	11,932	23	9,121	16	8,605

1. Mixed typhoid and cholera vaccine used for the first and second injections.

Pure typhoid vaccine used for the third injections.

NOTE.—V., in persons never vaccinated before; R., revaccinations.

ANTI-DYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF MAY, 1927

259

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children			
		First injections	Second injections	First injections	Second injections	First	Second
No. 1.	Tondo.....	17	9	12	10	29	19
	{ San Nicolas.....		4				4
	{ Binondo.....						
	{ Santa Cruz.....						
No. 2.	Quiapo.....	54	41	31	28	85	69
	{ San Miguel.....	2				2	
	{ San Miguel.....	3		5		8	
	{ Sampaloc.....	9	8	6	7	15	15
	{ Port Area.....						
No. 3.	Intramuros.....						
	{ Ermita.....	8		4		12	
	{ Malate.....	11		5		16	
	{ Paco.....	19	12	3	1	22	13
	{ Pandacan.....						
Total	{ Santa Ana.....						
		123	74	66	46	189	120

**CONSOLIDATED REPORT OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Total vaccina- tions	Vaccinated		
		Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	4,995	1,020	1,227	2,748
Albay.....	35,551	7,098	6,444	22,009
Antique.....	6,692	1,795	2,975	1,922
Agusan.....	2,787	721	681	1,385
Batanes.....	652	76	87	489
Bataan.....	5,758	2,235	1,688	1,835
Batangas.....	22,546	7,297	4,389	10,860
Bohol.....	6,119	1,944	1,819	2,356
Bukidnon.....	2,210	792	335	1,083
Bulacan.....	8,049	3,074	2,424	2,551
Cagayan.....	25,556	5,876	13,830	5,850
Camarines Norte.....	9,591	1,752	4,906	2,933
Camarines sur.....	10,872	2,853	3,971	4,548
Capiz.....	19,307	4,815	8,443	6,019
Catanduanes.....	3,972	962	974	2,036
Cavite.....	10,798	2,261	4,720	3,817
Cebu.....	43,405	14,391	6,423	22,591
Cotabato.....	12,266	3,753	3,897	4,616
Davao.....	20,181	8,036	6,981	5,164
Ilocos norte.....	12,559	2,700	3,789	6,070
Ilocos Sur.....	9,634	2,896	986	5,752
Iloilo.....	55,457	12,845	34,901	7,711
Isabela.....	23,715	6,177	13,545	3,993
Laguna.....	14,241	3,498	6,214	4,529
Lanao.....	22,571	6,533	11,784	4,254
La Union.....	11,142	2,254	230	8,658
Leyte.....	10,425	3,053	1,869	5,503
Marinduque.....	48,317	3,641	33,745	10,931
Masbate.....	3,286	1,209	570	1,507
Mindoro.....	1,949	504	326	1,119
Misamis.....	8,267	2,445	1,113	4,709
Mountain Province.....	19,672	4,907	11,761	3,004
Nueva Ecija.....	14,287	6,101	2,597	5,589
Nueva Vizcaya.....	1,767	668	220	879
Occidental Negros.....	47,369	17,061	20,092	10,216
Oriental Negros.....	15,385	4,952	4,558	5,875
Pampanga.....	20,831	5,100	8,809	6,922
Pangasinan.....	23,525	8,964	3,091	11,470
Rizal.....	52,178	8,514	41,430	2,234
Romblon.....	34,617	5,931	20,872	7,814
Samar.....	23,251	4,310	7,495	11,446
Sorsogon.....	10,088	4,527	306	5,255
Sulu.....	3,606	2,002	415	1,189
Surigao.....	2,804	1,364	303	1,137
Tarlac.....	10,181	2,567	5,462	2,152
Tayabas.....	16,078	6,931	2,847	6,300
Zambales.....	5,214	2,110	2,129	975
Zamboanga.....	5,364	1,431	943	2,990
Total.....	779,087	205,446	318,616	255,025

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.



**CONSOLIDATED REPORTS OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	417	256	856	813	851	1,281	2,124	2,350
Albay.....	3,172	874	5,138	1,156	7,916	3,251	16,226	5,281
Antique.....	616	185	721	533	448	741	1,785	1,459
Agusan.....	127	150	154	109	427	188	708	447
Batanes.....	60	50	81	57	97	152	238	259
Bataan.....	1,169	253	1,593	612	1,149	398	3,911	1,263
Batangas.....	3,525	940	4,840	1,985	4,091	3,892	12,456	6,817
Bohol.....	823	227	1,221	479	1,399	1,154	3,443	1,900
Bukidnon.....	54	78	180	232	455	843	689	1,153
Bulacan.....	3,012	549	1,857	831	1,579	1,011	6,448	2,891
Cagayan.....	2,308	366	3,805	671	6,524	5,146	12,637	6,183
Camarines Norte.....	804	146	1,440	316	2,948	1,436	5,192	1,898
Camarines Sur.....	1,577	571	1,387	588	3,759	2,198	6,723	3,357
Capiz.....	1,522	322	2,244	849	6,777	2,518	10,543	3,689
Catanduanes.....	460	269	479	322	473	400	1,412	991
Cavite.....	2,012	306	1,806	555	3,811	2,273	7,629	3,184
Cebu.....	4,203	1,238	5,076	1,440	4,915	4,287	14,194	6,965
Cotabato.....	819	262	786	755	2,477	2,193	3,532	3,210
Davao.....	441	146	1,687	563	7,603	3,241	9,681	3,950
Ilocos Norte.....	1,640	531	2,590	881	2,631	2,888	6,861	4,300
Ilocos Sur.....	1,249	400	1,656	682	1,534	1,684	4,439	2,766
Iloilo.....	2,816	374	6,187	2,055	14,969	14,121	23,972	16,550
Isabela.....	1,105	470	2,877	705	7,196	5,663	11,178	6,838
Laguna.....	1,765	387	2,090	868	3,770	4,020	7,625	5,225
Lanao.....	407	89	1,641	479	6,179	3,525	8,227	4,093
La Union.....	1,417	370	1,702	1,242	1,271	2,099	4,390	3,711
Leyte.....	400	165	1,200	450	2,353	1,069	3,953	1,684
Marinduque.....	836	189	3,063	866	17,909	7,709	21,808	8,764
Masbate.....	390	147	514	211	916	401	1,820	759
Mindoro.....	316	125	207	115	506	347	1,029	587
Misamis.....	366	169	661	280	1,209	700	2,236	1,149
Mountain Province.....	733	161	2,324	579	7,648	5,439	10,705	6,179
Nueva Ecija.....	2,563	700	3,506	1,416	2,104	1,894	8,173	4,010
Nueva Vizcaya.....	320	153	197	215	274	503	791	871
Occidental Negros.....	3,426	649	5,538	1,442	9,265	6,536	18,229	8,627
Oriental Negros.....	2,136	620	2,182	1,057	4,016	1,958	8,334	3,635
Pampanga.....	1,656	330	1,509	477	3,054	2,621	6,219	3,428
Pangasinan.....	4,039	936	4,997	1,710	3,910	3,303	12,946	5,949
Rizal.....	2,791	563	4,695	1,768	10,799	16,419	18,285	18,750
Romblon.....	973	134	3,778	1,162	12,328	9,671	17,079	10,967
Samar.....	1,144	499	2,089	1,386	3,485	3,043	6,718	4,928
Sorsogon.....	1,063	428	2,029	956	2,486	1,433	5,528	2,817
Sulu.....	205	87	452	197	1,000	634	1,657	918
Surigao.....	383	146	555	210	713	358	1,651	714
Tarlac.....	1,249	395	1,931	1,068	1,950	2,618	5,130	4,081
Tayabas.....	2,659	406	3,968	828	5,179	2,189	11,806	3,373
Zambales.....	1,061	215	1,113	492	914	1,133	3,088	1,840
Zamboanga.....	270	426	468	906	614	1,399	1,852	2,731
Total.....	65,999	17,402	100,970	37,569	187,831	141,470	854,800	196,441

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-CHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	13,461	5,252		18,713
Antique.....	8,641	5,058		13,699
Bataan.....	1,667			1,667
Batangas.....	5,871			5,871
Bulacan.....	44,296	78		44,374
Camarines Norte.....	1,841	10		1,851
Camarines Sur.....	7,710	45		7,755
Capiz.....	9,051	2,688		11,739
Catanduanes.....	102			102
Cavite.....	336			336
Cebu.....	57			57
Ilocos Norte.....	5,014	1,761		6,775
Iloilo.....	18,754	3,771		22,525
Isabela.....	77			77
Laguna.....	660	68		728
Leyte.....	3,928	1,475		5,403
Marinduque.....	502			502
Nueva Ecija.....	123	33		156
Pampanga.....	41,939	5,435		47,374
Pangasinan.....	4,916	2,875		7,291
Rizal.....	5,992	393		6,385
Romblon.....	448			448
Sorsogon.....	1,804	256		2,060
Tarlac.....	4,411	734		5,145
Total.....	181,601	29,432		211,033

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-TYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	82	64	25	171
Batangas.....	37	34	29	100
Bulacan.....	1,250	678	432	2,360
Camarines Sur.....	97	19		116
Catanduanes.....	7	6		13
Iloilo.....	1,979	933	357	3,269
Laguna.....	1,498	833	594	2,925
La Union.....	267	242	244	753
Nueva Ecija.....	150	126	39	315
Pampanga.....	1,115	1,404	709	3,228
Pangasinan.....	1,393	1,212	860	3,465
Rizal.....	1,526	486	56	2,068
Samar.....	2			2
Tarlac.....	590	251	20	861
Total.....	9,993	6,288	3,365	19,646

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	6,278	1,561		8,839
Bataan.....	816	597		1,413
Batangas.....	3,368	1,906		5,274
Bulacan.....	1,251	522		1,773
Bohol.....	1,368	886		2,254
Cagayan.....	2,480	1,142		3,622
Camarines Norte.....	220	119		339
Camarines Sur.....	844	312		1,156
Cavite.....	16,897	15,444		32,341
Cebu.....	10,378	1,327		11,705
Cotabato.....	307			307
Davao.....	639	473		1,112
Ilocos Norte.....	38	96		134
Ilocos Sur.....	2,125	1,589		3,714
Iloilo.....	5,104	3,146		8,250
Isabela.....	63	56		119
Laguna.....	5			5
Lanao.....	2,552	1,048		3,600
La Union.....	3,513	2,164		5,677
Leyte.....	1,515	621		2,136
Masbate.....	1,225	363		1,588
Misamis.....	2,265	571		2,836
Nueva Ecija.....	2,759	1,090		3,849
Nueva Vizcaya.....	1,605	1,205		2,810
Occidental Negros.....	45,630	25,032		70,662
Oriental Negros.....	1,994	1,321		3,315
Pampanga.....	17,763	12,274		30,037
Pangasinan.....	29			29
Rizal.....	26,149	13,427		39,576
Samar.....	549	125		674
Surigao.....	403	308		711
Tarlac.....	4,035	769		4,804
Tayabas.....	9,806	4,838		13,644
Zambales.....	3,364	3,083		6,447
Zamboanga.....	5,090	1,103		6,193
Total.....	182,427	98,518		280,945

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF MAY, 1927**

Provinces and towns	Cases	Deaths
CEBU		
Cebu.....	1	0
Total.....	1	0

REMARKS: Foreign from Singapore

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF MAY, 1927.**

No case and no death reported during the month.

**REPORT OF THE DIVISION OF SANITARY ENGINEERING CITY OF MANILA,  
DURING THE MONTH OF MAY, 1927**

Sanitary orders	Health districts			
	No. 1 Meisic	No. 2 Sampaloc	No. 3 Paco	Total
<b>Orders pending, May 1, 1927:</b>				
Minor.....	136	147	63	346
Sewer.....	25	48	1	74
Vacating.....	8	11	.....	19
Filling.....	9	85	17	61
<b>Total.....</b>	<b>178</b>	<b>241</b>	<b>81</b>	<b>500</b>
<b>Orders issued during the month:</b>				
Minor.....	10	7	4	21
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>10</b>	<b>7</b>	<b>4</b>	<b>21</b>
<b>Orders completed during the month:</b>				
Minor.....	20	6	5	31
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	1	1
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>20</b>	<b>6</b>	<b>6</b>	<b>32</b>
<b>Orders cancelled during the month:</b>				
Minor.....	.....	1	8	9
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>.....</b>	<b>1</b>	<b>8</b>	<b>9</b>
<b>Orders pending, May 31, 1927:</b>				
Minor.....	126	147	54	327
Sewer.....	25	48	1	74
Vacating.....	8	11	.....	19
Filling.....	9	85	16	60
<b>Total.....</b>	<b>168</b>	<b>241</b>	<b>71</b>	<b>480</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	23	37	41	101
<b>Permits for minor building constructions:</b>				
Approved.....	32	51	33	116
Disapproved.....	10	5	4	19
<b>New buildings completed.....</b>	<b>12</b>	<b>26</b>	<b>24</b>	<b>62</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	5	35	19	59
Disapproved.....	4	3	3	10
<b>Prosecutions:</b>				
Convictions.....	1	.....	.....	1
Dismissals.....	4	1	.....	5
Amount of Fines.....	P10.00	.....	.....	P10.00
<b>Plumbing permits issued.....</b>	<b>35</b>	<b>60</b>	<b>51</b>	<b>146</b>
<b>Plumbing projects completed.....</b>	<b>17</b>	<b>28</b>	<b>24</b>	<b>69</b>
<b>Premises connected to the sanitary sewer to April 30, 1927</b>	<b>2,508</b>	<b>4,295</b>	<b>702</b>	<b>7,505</b>
<b>Connected during the month.....</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>10</b>
<b>Total.....</b>	<b>2,510</b>	<b>4,299</b>	<b>706</b>	<b>7,515</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

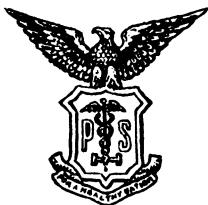
VOL. VII

JUNE, 1927

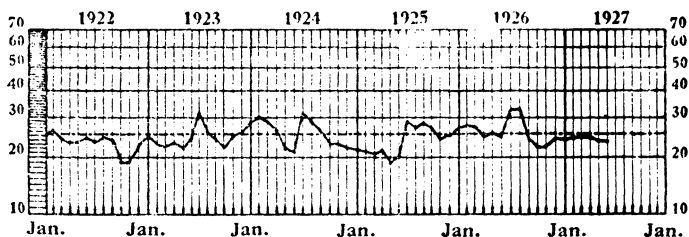
No. 6

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germes, says the United States Public Health Service, are usually a hand to mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1927

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Preliminary Differential Characters of Philippine Anopheline Mosquito Larvæ, by F. K. BAISAS.....	267
Malaria Inquiry and Control in Mindanao and Sulu, by Dr. C. MANALANG .....	281
The Engineer's Part in Malaria Control, by LUIS CLAUSTRO.....	299
Indorsement .....	315
Miscellaneous .....	317
General Statistics .....	321

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

JUNE, 1927

No. 6

PRELIMINARY DIFFERENTIAL CHARACTERS OF PHILIPPINE ANOPHELINE MOSQUITO LARVÆ <sup>1</sup>

[By F. K. BAISAS]

Exclusive of the varieties, we have so far found fifteen species of *Anopheles* in the Philippine Islands, either in larval or adult forms, or both. Three of these, still unnamed, were encountered in Mindanao by Doctor C. Manalang and one was found in Olongapo. In addition, one of doubtful individuality as a species was found in Los Baños.

We used here the standard generic term, "*Anopheles*," notwithstanding the subgeneric names used by many authorities, as: *Nyssorhynchus*, *Cellia*, *Christophersia*, and so on, etc.

These *Anopheles* are as follows:

1. *Anopheles barbirostris*, Van der Wulp (typical).  
*Anopheles barbirostris* (variety No. 1).  
*Anopheles barbirostris* (variety No. 2).
2. *Anopheles hyrcanus*, Pallas (typical).  
*Anopheles hyrcanus* (variety No. 1).  
*Anopheles hyrcanus* (variety No. 2).  
*Anopheles* (variety intermediate between *barbirostris* and *hyrcanus* varieties).
3. *Anopheles minimus*, Theobald (typical).  
*Anopheles minimus* (variety No. 1).  
*Anopheles minimus* (variety No. 2).  
*Anopheles minimus* (variety No. 3).

<sup>1</sup> This work is based upon the works of Carter in Ceylon and of Doctor Russell in the United States. The work of Iyengar and Stanton were also used as references.

4. *Anopheles rossi*, Giles (fresh water pool type).  
*Anopheles rossii* (river and slow type).
- Anopheles rossii* (salt water marsh type).
5. *Anopheles ludlowii*, Theobald (fresh water type).  
*Anopheles ludlowii* (salt water type).
6. *Anopheles fuliginosus*, Giles.
7. *Anopheles philippinensis*, Ludlow.
8. *Anopheles kochi*, Donitz.
9. *Anopheles maculatus*, Theobald.
10. *Anopheles tessellatus*, Theobald.
11. *Anopheles leucosphyrus*, Donitz.
12. *Anopheles* X-1.
13. *Anopheles* X-2.
14. *Anopheles* X-3.
15. *Anopheles* X-4.

Although Christophers and Iyengar hold that *subpictus*, due to priority, is the correct name for *rossii*, the latter is so widely and generally used that we also use it here instead of the former.

Variations from the typical forms have been noted in some species—variations that are in themselves not constant which account for the so-called “varieties” and “intermediary forms.” Perhaps these variations are of little or no interest from the sanitary standpoint, but may be dealt with as biological curiosities, especially those of *hyrcanus* and *barbirostris* which are not discussed in the literature. The final criterion is of course to pursue whether or not these varieties breed true to form from generation to generation.

There are also certain abnormalities in the branching of hairs, and even in the hairs themselves. Sometimes, one or the other of the inner or outer anterior clypeal hairs may be double or branched very unusually. At others, there may be a double inner anterior submedian thoracic hairs; and there is a remarkable case in which a typical *minimus* has a feathery hair between the inner anterior clypeal hairs.

It is well to remember what Alcock says, namely—“Though the individuals composing a species are alike, they have not the uniformity of a geometrical figure; there seems to be an inevitable tendency to vary from the ideal specific standard, particularly in the case of a common species ranging over a wide and diversified area—a Darwinian proposition which any one can verify. What such individual deviations from the standard depend on, it is impossible to say; but it is reasonable to believe, with the Mendelists, that unless they are the issue of some innate modification they are powerless to affect permanently the inherent



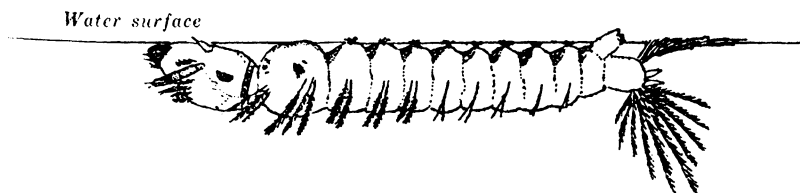
stability of the specific type; if, however, they are inborn and particularly, if also they are useful, or are sheltered by geographical isolation, it is consonant with the Darwinian theory that they may be perpetuated as races or as subspecies.

It remains to be said that when the eye is constantly focussed upon a single group of animals, it has the natural tendency to magnify and dwell upon differences and distances. Hence, not only are species split into subspecies, genera into subgenera, families into subfamilies, and orders into suborders and superfamilies, but also classes may be split into subclasses. Generally approved convenience of reference is the only justification for a method that often is much "more studious to divide than to unite."

The latter statement has special significance with our larvae. For instance, the differentiation in *ludlowii* (salt water type) and *rossii* (slew-river type) lies only in the slight differences in position and relative lengths of the clypeal and preantennal hairs. This may be the basis of the contention of some authorities that *rossii* (adult legs speckled) and *ludlowii* (adult legs spotted) are mere variations of one and the same species. Again, in *maculatus*, the standard or typical form can readily be recognized at a glance under the microscope; but there are many cases when the most careful considerations should be exercised before they can finally be classified as such.

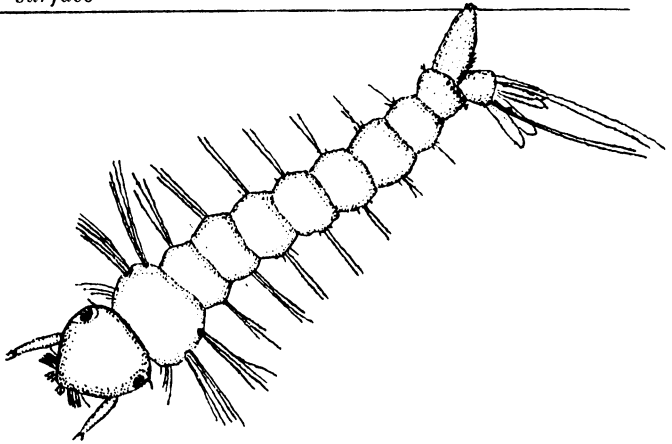
Doctor Root in a recent letter to Doctor Heiser relative to *minimus* and its varieties found in the Philippines places all those having branches of one kind or another in the clypeal and antennal hairs, under *A. funestus* variety *aconitus*, and those without branches (except sometimes for the slight apical bifurcation in the inner anterior clypeal and preantennal hairs), under *A. funestus* variety *minimus*.

1. *A. barbirostris*, Van del Wulp (typical form).—A very large species, the largest of all those described in this paper; generally black in color with very variable white markings; sometimes without white parts; and, occasionally, the whole larva is light green in color like *hyrcanus*.

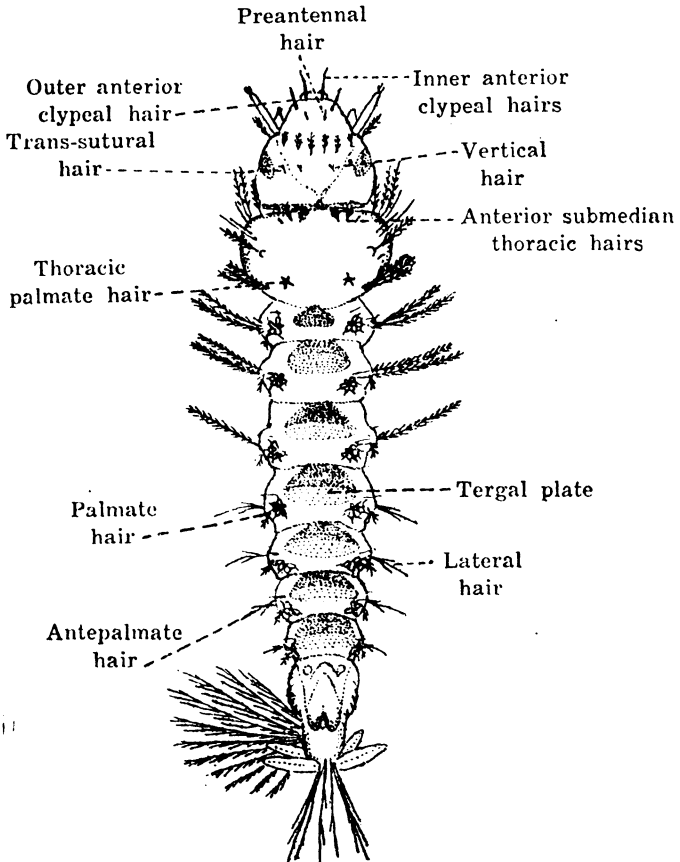


Larva of *Anopheles* (much enlarged)

*Water surface*



Larva of *Culex* (much enlarged)



*Anopheles minimus* Theobald (typical)

**Habitat:** Impounded water; slow and fast moving rivers, streams, and ditches; slews; large pools; pools with slight brackish water; and even in sewage canal with fresh human stool (Imus, Cavite, Dr. C. M.).

**Head:** clypeal hairs,—inner anterior stout, long, simple, closely approximated, the ends usually crossing each other; outer anterior dendriform, with short, thick stems and numerous stout branches; preantennal short, with short branches, usually bifid or trifid, situated behind the inner and outer anterior clypeal hairs at about three-fifth the distance from the inner to the outer; vertical hair short, with several branches; trans-sutural similar in form to the vertical; antenna with a relatively larged branched hair arising near the middle of the inner surface. **Thorax:** sub-median anterior hairs,—the inner small with from five to fourteen branches arising from the base; palmate hairs rudimentary with usually twelve sharp pointed narrow long leaflets. **Abdomen:** tergal plates large; palmate hairs on the first segment similar to those on the thorax; on the second more developed but like those on the thorax and first segment light colored; on the third to the seventh segments well developed, large, with broad highly pigmented leaflets. Antepalmate of the fourth and fifth segments bifid at the distal ends, though one or the other may at times be simple; lateral hairs of the same segments usually branched into two.

*A. barbirostris* (variety No. 1).—Same in all respects as the typical form except for the minute lateral branches near the apex of the inner anterior clypeal hairs.

*A. barbirostris* (variety No. 2).—Also the same as the typical form but for the stout branchings (two or more) arising at about the distal third of the inner anterior clypeal hairs.

2. *A. hyrcanus*, Pallas (typical form).—About as large or a little smaller than *barbirostris*; generally light green in color but sometimes also blackish with or without white markings.

**Habitat:** lakes, slews, impounded water, slow flowing rivers, streams and ditches and large pools.

Very similar to *barbirostris* from which it can be differentiated only by the inner anterior submedian thoracic hairs which are usually simple or branched apically into two or three.

*A. hyrcanus* (varieties Nos. 1 and 2) have the corresponding branchings of the inner anterior clypeal hairs of *barbirostris* varieties Nos. 1 and 2, respectively.

*Anopheles* variety intermediate between *babirostris* and *hyrcanus* varieties has, in addition to the branchings of the inner

anterior clypeal hairs, both apical and basal, and, sometimes, intermediary branches in the inner anterior submedian thoracic hairs.

3. *Anopheles minimus*, Theobald (typical form).—A small very black larva without any white marking whatsoever. Besides of the thorax may be lighter in hue in some cases as those found in certain sections of Laguna and other places.

Habitat: Its favorite haunts are along edges and among debris, roots, stones, and vegetation of clear, swift-flowing, shady rivers, streams, and ditches. In the absence of such places, however, it may be found in semi-stagnant or stagnant water more or less foul and dirty (Novaliches, Rizal and Taal, Batangas), and even in rain water collection in rock holes (Jolo, Dr. C. M.), and once found in sewage stream (Mambajao, Dr. C. M.).

Head: clypeal hairs,—inner anterior long, simple, stout, widely separated (invariably appearing bold and dark under the microscope); rarely bifurcated at the extreme apex. Outer anterior half or more the length of the inner, stout, simple, or, in abnormal cases, one or the other with a stout lateral branch; preantennal situated behind the inner anterior, short, not as stout as the outer, simple or sometimes bifid at the extreme distal end; vertical hairs small, usually with two main divisions, each division with or without branches or the whole hair may occasionally be simple; trans-sutural similar to but slightly larger than the vertical. Thorax: anterior submedian hairs stout, the middle and inner possessing many stout branches, each hair arising from large tubercles. Palmate hairs relatively large, with sharp pointed narrow leaflets. Abdomen: tergal plates very large and distinct which alone can be used with surety to pick out this group of *Anopheles* from the rest. Palmate hairs of the first segment usually similar though smaller than those on the thorax; on the second to the seventh segments fully developed, large, having hollow leaflets with serrated openings just at the bases of the filaments. The number of leaflets varies from 10 to 14 on the first segment and from 12 to 23 on the others. Antepalmate of the fourth and fifth segments simple; lateral hairs usually with three branches arising from a common point.

*A. minimus* (variety No. 1.).—As a general rule lighter in color than the typical *minimus*.

A limited number is often associated with the typical form, but most of them breed in large springs, slow-flowing streams, and ditches with rather many aquatic plants.

Only differs from the typical form in that all the anterior clypeal and preantennal hairs possess quite a few branches.

*A. minimus* (variety No. 2).—Has only the inner anterior clypeal and the preantennal hairs branched.

*A. minimus* (variety No. 3).—Has only the inner anterior alone branched.

4. *A. rossii*, Giles (fresh water pool type).—A moderately large species, grey or light grey in color, with or without white spots on the thorax and abdomen.

Habitat: primarily adapted to small open pools, it is, nevertheless, found breeding in all sort of fresh water breeding places, including quite a deep well, and large artificial containers.

Head: clypeal hairs,—inner anterior slender, simple, widely separated; outer anterior slender, simple, short, about a third the length of the inner; preantennal short, slender, simple, usually more closely separated than the inner anterior, but sometimes as wide or even wider; situated more closely behind the inner than those of *ludlowii*; vertical hair simple, slender, long; trans-sutural long, slender with from three to six slender long branches. Thorax: anterior submedian hairs slender, the inner and middle ones having slender branches; palmate hairs very rudimentary composing of a hair with two or three long branches. Abdomen: palmate hairs of the first segment rudimentary, with narrow, closed, overlapping leaflets; of the second to the seventh segments developed, but rather small with slender, and not so well, opened leaflets; tergal plates small; antepamate of the fourth and fifth segments simple; lateral hairs of the same segments usually branched into three, but may at times have only two or even four.

*A. rossii* (river-slew type).—Generally greenish in color with two white spots on the anterior part of the thorax and some white parts on the abdomen; occasionally without any white markings. As a rule larger than the pool type or *rossii*.

Habitat: rivers, slews, impounded water and large pools.

This differs from the pool type *rossii*, in that the clypeal hairs as well as the preantennal are longer, more stout, and the outer are half or more the length of the inner anterior clypeal. The preantennal hairs are sometimes forked into two equal divisions at about the distal half; these hairs are farther and more or less directly behind the inner anterior clypeal. The other hairs

are also larger, especially the abdominal palmate hairs which have broader and wide opened leaflets; those on the first segment (it should be remembered) have always well-defined open leaflets: tergal plates more pronounced than those of *pool rossii*.

The type of *rossii* found in salt water marsh is similar to this river-slew type *rossii*.

5. *Anopheles ludlowii*, Theobald (fresh water type).—About as large as *pool rossii* which it resembles in general coloration.

Habitat: Invariably found among algae and the charalike plant in large rivers and sometimes in slews (Pampanga, Bulacan, and Mindoro).

This species may be termed intermediate between the two types of *rossii*. Its clypeal and preantennal hairs are similar to those of *rossii* slew type while the palmate hairs on the first abdominal segments are like those of *pool rossii*. The other palmate hairs are not as large nor as small as the palmate hairs of *rossii* slew and pool types respectively.

Formerly considered as a variety of *rossii*, it seems at present commonly accepted as a distinct species. It has a definite seasonal prevalence in Pampanga, where it is most numerous from November to February. It does not breed during the height of the rainy season or during the hottest and driest part of the dry season.

A. *ludlowii* (salt water type).—Found in salt water marsh, fish ponds, and pools in Zamboanga and Olongapo.

Macroscopically and microscopically resembling salt water *rossii*, it is extremely difficult to tell which is which, when they happen to breed together. Slight differences occur in the clypeal and preantennal hairs which are, in this *ludlowii*, remarkably long, the outer anterior in many cases, reaching over two-thirds the length of the inner; (of course there are quite a few exceptions); the preantennal hairs are visibly much more set far behind the inner anterior clypeal. The palmate hairs on the first abdominal segments are usually not so large and not so opened as those of river *rossii*.

6. *Anopheles fuliginosus*, Giles.—Almost always greenish or light green in color. A moderately large species like *rossii*, slew type.

Habitat: small lakes, slews, impounded water, large pools, and slow-flowing rivers and streams.

Head: clypeal hairs,—inner anterior widely separated, long, stout, with numerous short lateral branches at about the distal half; outer anterior about two-thirds the length of the inner,

thickly branched, plumose; preantennal directly behind the inner anterior clypeal, with usually three branches, but sometimes two or four; trans-sutural similar in form to the vertical; vertical hairs sometimes simple, usually branched from two to five. Thorax: anterior submedian hairs large, stout with many stout branches similar to those of *minimus*; palmate hair rudimentary with from 8 to 15 narrow, sharp pointed leaflets. Abdomen: tergal plates moderately large; palmate hairs of the first segment small, with from 10 to 12 narrow leaflets; on the second to the seventh segments well developed, those from the third down, sometimes having hollow leaflets like those of *minimus*; the number of leaflets of the larger palmate hairs varies from 12 to 20; antepalmate of the fourth and fifth segments simple; lateral hairs of the same segments with two or three branches.

7. *Anopheles philippinensis*, Ludlowi.—Some authorities consider this as a variety of *fuliginosus*.

A species about as large as *fuliginosus* with which it is commonly associated; greyish or light greenish in color with very distinct white parts on the anterior half of the thorax, the whole dorsal side of the second, third, sixth, and seventh abdominal segments. Some white markings on the other segments may be detected under the microscope.

Microscopically the same as *fuliginosus* except for the above cited white markings. In adult forms they are also alike except that *fuliginosus* is a combination of black and white while *philippinensis* is of grey and yellow.

8. *Anopheles kochi*, Donitz.—Like pool *rossii* except for the pronounced white part on the thorax and a smaller one on the "tail."

Breeds in small open pools with *rossii*, but may be found also in ricefields and ditches. Is primarily a rainy season breeder.

Head: clypeal hairs,—inner anterior frayed; outer anterior simple; preantennal situated far behind the inner clypeal, simple; vertical hairs simple; trans-sutural simple, sometimes spiked. Thorax: anterior submedian more or less like those of *rossii*; palmate hairs rudimentary. Abdomen: tergal plates small; palmate hairs of the first segment rudimentary; of the second to the seventh segments developed with steepled leaflets.

9. *A. maculatus*, Theobald.—Very much like fresh water *ludlowii* in size and macroscopic appearance.

Breeds abundantly in Baguio; in small springs and small shallow concrete pool for water supply in Olongapo; and in Bucal springs in Calamba. A very limited number is encoun-

tered now and then in rivers and streams in Laguna and in Mindoro; in small seepages of river banks in Del Carmen. In all these places it was found among algae, thus corroborating the findings in other places. In Caranglan, Nueva Ecija, however, it was encountered in seepages along stream banks where there were dead leaves and debris but no algae.

Head: clypeal hairs,—inner anterior widely separated, long stout, with very fine lateral branches which are sometimes so small that they can only be detected under the high power, or else absent altogether. Outer anterior about half the length of the inner, with or without fine lateral branches; preantennal relatively long, usually simple but may have a few branches arising from the stem; vertical hair moderately long, simple or bifurcated distally; trans-sutural with two to five branches but may be simple. Thorax: anterior submedian hairs,—like those of *minimus*; palmate hairs rudimentary, or else represented by a single simple hair. Abdomen: tergal plates moderately large and black; palmate hairs on the first segment like those on the thorax; on the second small with narrow leaflets; on the third to the seventh segments well developed with their characteristic broad ended leaflets; sometimes, however, also lanceolate; antepalmate of the fourth and fifth segments simple; lateral hairs of the fourth and fifth segments usually branched from five to seven but may have less.

10. *A. tessellatus*, Theobald.—The larvae of this species must be extremely rare if not breeding in a most uncommon place as we have not seen a single one although a few adults were caught wild in Laguna and in Pampanga.

11. *A. leucosphyrus*, Donitz.—Resembles *maculatus* in size and coloration.

Breeds in very limited number in holes of rocks and big boulders in upper Pili creek of Los Baños College.

Head: clypeal hairs,—inner anterior stout, or moderately slender, widely separated, long, simple or sometimes with a few, minutes, widely separated lateral branches; outer anterior slender, simple, about one-fourth the length of the inner; preantennal directly behind the inner, slender, simple, short; vertical hairs long, slender, usually simple or really bifurcated distally; trans-sutural long, stout, branched from two to five or at times simple. Thorax: anterior submedian hairs stout with many stout branches; palmate hairs represented by a single long blade. Abdomen: palmate hairs of the first segment vestigial, with three or four narrow leaflets; of the second similar to those



of the first but larger; of the third to the seventh segments developed with from 14 to 17 moderately broad, lanceolate leaflets; antepalmate of the fourth and fifth segments branched into three or four; lateral hairs of the same segments sometimes simple or branched into two.

12. *Anopheles X-1*.—A large species found in brackish water under coconut palms in Zamboanga.

Head: clypeal hairs,—inner anterior closely approximated, moderately long, stout, with a few lateral branches at the distal half; outer anterior composing of a stout stem divided into two or more main branches which are in turn re-branched rather sparsely unlike those of *barbirostris* or *hyrcanus* which are thickly branched; the entire length of the outer is about equal or more than the length of the inner; preantennal short, slender, simple, situated at about fourth-fifth the distance from the inner to the outer clypeal hairs; vertical hair small with four or less branches; trans-sutural similar to the vertical. Thorax: anterior submedian hairs rather small, the inner having about four short branches; palmate hairs represented by a feathery one. Abdomen: tergal plates rather small; palmate hairs on all segments absent, in place of which are feathery hairs, two pairs on each segment except the first where there is only one pair; these hairs are duplicated a little down the sides of the abdominal segments; lateral hairs of the fourth and fifth segments branched into two or three; a little anteriorly above them are another long, stout simple hairs, running more or less parallel to the lateral hairs.

This may be *Anopheles umbrosus* or one allied to it.

13. *Anopheles X-2*.—Found with *minimus* and *barbirostris* in Lumatil river, Cotabato, Mindanao.

Head: clypeal hairs,—inner anterior closely approximated but not so closely as those of *barbirostris* or *hyrcanus*, long, stout broadening toward the ends where each one forks symmetrically at about the distal half, the forks being close together and numbering from three to four. Outer anterior close to the inner, stout, simple, short, less than a third the length of the inner; preantennal situated rather far behind the clypeal hairs, small, with two to five basal divisions; antennae with stout, quite long projections; vertical hairs branched into four or five; trans-sutural similar to the vertical. Thorax: anterior submedian hairs,—relatively small, dark, stout with stout closely separated branches; palmate hairs quite large though not well developed, with many lanceolate leaflets. Abdomen: tergal plates rather

small; palmate hairs of the first segment similar to, but smaller than, those on the thorax; of the second to the seventh segments fully developed, with 16 to 18 relatively broad leaflets; antepalmate of the fourth segment simple, long, stout; anteriorly near it is another hair branched distally; of the fifth segment the same but the other hair is absent; lateral hairs of these segments slender, with 2 or 3 branches.

*Anopheles X-3*.—A few larvae of this were found in Caraclan river of Olongapo. This may be *Anopheles aitkeni* which has been reported found in Mindanao.

Head: clypeal hairs,—inner anterior closely approximated, the bases touching each other, long, stout, simple; outer anterior short, stout, simple less than a third the length of the inner; preantennal situated far behind the outer and more widely separated than the outer, having three or more branches; antennae with numerous stout projections on the inner side; vertical hair slender with 3 branches; trans-sutural similar to, but with more branches than, the vertical. Thorax: anterior submedian,—inner small, stout, with six or more branches; middle long, stout, with many stout, bold branches; outer usually simple but one or the other may be bifurcated apically; palmate hairs rather large, though not fully developed, with about a dozen sharp pointed narrow leaflets. Abdomen: tergal plates moderate; palmate hairs on the first segment similar to those on the thorax; on the second to the seventh segments fully developed with very lanceolate sharp pointed leaflets; antepalmate of the fourth and fifth segments simple, long, stout; those on the fourth supplemented by another closely placed near them, each having 3 branches; lateral hairs of these segments branched into three.

15. *Anopheles X 4*.—From streams formed by springs, Butung and Gotas, Malangas, Mindanao.

Head: clypeal hairs,—internal and external identical with those of *rossii* (slew type); preantennal simple; vertical simple or bifid; trans-sutural simple. Thorax: submedian hairs similar to those of *rossii*; palmate hairs open with 12 leaflets; Abdomen: tergal plates developed but not as large as those of *minus*; palmate hairs of the first segment rudimentary, closed, with five or six leaflets; of the second to the seventh segments developed with 16 to 18 leaves whose extremities are steepled; antepalmate of the fourth and fifth segments with three or four branches; comb with four long and nine short teeth.

Two larvæ found in Anos creek of Los Baños, Laguna. Numerous *minimus* larvæ (both typical and varieties) were collected with them.

Head: clypeal hairs,—inner anterior moderately stout with a few minute lateral branches; outer anterior slender, simple, less than a third the length of the inner; preantennal slender, short, simple, situated far behind the inner and more widely separated than the inner; vertical hairs small, branched into two; trans-sutural similar to, but smaller than, the vertical, and having 3 branches each. Thorax: anterior submedian hairs, inner scantily branched (two to four), small, short; middle with eight branches each; palmate hairs vestigial, with two or three narrow sharp pointed leaflets. Abdomen: palmate hairs of the first and second segments rudimentary, with eight or nine narrow sharp pointed leaflets; of the third to the seventh segments developed with 14 to 18 lanceolate leaflets; antepal-mate of the fourth segment branched into three; of the fifth branched into four; lateral hairs of these segments branched into two or three each.

*Key to some Philippine Anopheles mosquito larvæ*

1. Inner anterior clypeal hairs closely approximated, the bases touching each other or nearly so, and the ends, in many cases, crossing each other ..... 2
- Inner anterior clypeal hairs widely separated..... 3
2. Inner anterior clypeal hairs simple; outer dendriform..... 4
- Inner anterior clypeal hairs simple; outer simple, short.. *Anopheles* X-3.
- Inner anterior clypeal hairs branched; outer dendriform..... 5
3. Inner anterior clypeal hairs thickly branched at the distal half; outer plumose ..... 6
- Inner anterior widening toward the ends where they are symmetrically divided like a fork; outer simple, short..... *Anopheles* X-2.
- Inner anterior more or less lightly branched..... 7
- Inner anterior simple ..... 8
4. Inner anterior submedian thoracic hairs each branched basally from 5 to 14 ..... *A. barbirostris* (typical).
- These hairs simple or each branched apically into two or three ..... *A. hyrcanus* (typical).
5. Outer anterior clypeal hairs about as long or longer than the inner; palmate hairs on the thorax and abdominal segments absent ..... *Anopheles* X-4.
- Outer anterior much shorter than the inner; branches of the inner fine ..... 9
- Outer anterior much shorter than the inner; branches of the inner few and coarse ..... 10

6. Anterior half of the thorax, while dorsal part of second, third, sixth and seventh abdominal segments white..... *A. philippinensis*.  
No white marking of any kind..... *A. fuliginosus*.
7. Outer anterior clypeal hairs half or more the length of the inner ..... 11  
These hairs about a third the length of the inner..... *A. leucosphyrus*
8. Outer anterior clypeal hairs less than half the length of the inner;  
thoracic palmate hairs rudimentary..... *A. rossii* (pool type).  
Same but thoracic palmate hairs large and quite developed...  
*Anopheles* X-4.
- Outer anterior hairs half or more the length of the inner..... 12
9. Inner anterior submedian thoracic hairs branched basally.  
*A. barbirostris* (variety No. 1).  
These hairs simple or branched apically..... *A. hyrcanus* (v. 2).
10. Inner anterior submedian thoracic hairs branched basally.  
*A. barbirostris* (variety No. 2).  
These hairs simple or branched apically..... *A. hyrcanus* (v. 2).  
These hairs having both apical and basal and sometimes intermediary branching.... *Anopheles* variety intermediate between *barbirostris* and *hyrcanus* varieties.
11. Tergal plates very large; palmate hairs from the thorax to the seventh abdominal segment well defined, those on the segments with leaflets having hollow ends..... (*A. minimus* varieties) 13  
Tergal plates moderately large; leaflets of abdominal palmate hairs broad ended ..... *A. maculatus*.  
Tergal plates small; leaflets of abdominal palmate hairs steeple-ended ..... *A. kochi*.
12. Tergal plates large; palmate hairs from the thorax to the seventh abdominal segment well defined ..... *A. minimus* (typical).  
Tergal plates small; palmate hairs of first abdominal segment quite developed with open leaflets ..... *A. rossii* (slew type).  
Tergal plates small; palmate hairs on first abdominal segment not so developed; preantennal very long and situated very far behind the inner clypeal hairs..... *A. ludlowii* (salt water type).  
Tergal plates small; palmate hairs on first abdominal segment rudimentary with narrow overlapping leaflets.  
*A. ludlowii* (fresh water type).
13. Outer anterior clypeal hairs branched; preantennal forked.  
*A. minimus* (variety No. 1).  
Outer anterior clypeal hairs simple; preantennal forked.  
*A. minimus* (variety No. 2).  
Outer anterior clypeal and preantennal hairs simple.  
*A. minimus* (variety No. 3).

## MALARIA INQUIRY AND CONTROL IN MINDANAO AND SULU <sup>1</sup>

By C. MANALANG, M.D.

*Chief, Malaria Control Section, Philippine Health Service*

Subjective informations on malaria in any given place according to recent experience should always be checked by objective data. By subjective informations are meant those statistics furnished by district health officers compiled from reports of presidents of sanitary divisions, sanitary inspectors, municipal secretaries, *concejales*, or *tenientes del barrio*, and other informations given by hospitals, private or otherwise, public dispensaries, corporations, private practitioners, or individual. By objective data are meant, spleen and blood indices from children, and the breeding places and species of *Anopheles* found. It is, therefore, evident that by subjective informations, by their mere origins are necessarily subject to a number of errors which may be technical, psychological, or even malicious in nature, which, as a matter of fact, may be the cause of apprehension in some quarters, when danger does not really exist, and, to a minor extent, vice versa. On the other hand, objective observations carried on by reasonably competent hands, tho subject to technical errors, if carried conscientiously, should give a fair idea of the malaria situation in any given place—the detection of enlarged spleen offers little difficulty as the abdominal wall of children is thin. The discovery of a gamete carrier is much facilitated by the use of the Barber's thick smears method which saves from 10 to 20 times the time employed in searching for parasites in thin smears. The classification of *Anopheles* larvæ is on a firm basis and not difficult.

History of malarial attacks has been ignored due to its unreliability, even in endemic areas, not only because the children in many cases do not have a fixed idea of the disease, but because the answers were often psychologically influenced. For instance, in Sulu, where absence from school except by illness meant severe punishment for the father, the history incidence was very far beyond the spleen index. On the other hand, in

---

<sup>1</sup> Based on the report submitted to the Director of Health.

the interior of Davao, where children probably dreaded the medicine, the history incidence was far below the spleen index.

The present report covers only small portions of the provinces of Zamboanga, Jolo, Cotabato, Davao, Agusan, and Misamis, with some geographical comments or notes, spleen examination of 1,896 children from 2 to 15 years of age, and 1,429 blood smears. Surveys and controls are now being extended by the different district health officers and will be reported on from time to time. At the present writing, there are proposed about 7 control areas in Sulu, 4 in Zamboanga, 20 in Davao, 2 in Agusan, and 2 in Cotabato.

*Table showing anopheline species and splenic surveys*

Predominant species	Province	Place	Spleen index	Remarks
<i>A. minimus</i> .....	Davao.....	Daliao.....	<i>P. cent</i> 4	<i>A. minimus</i> were invariably found on the edges of clear running hill or mountain streams.
Do.....	do.....	Santa Cruz.....	9	
Do.....	do.....	Digos.....	23	
Do.....	do.....	Tugbok.....	24	
Do.....	Zamboanga.....	Lamitan.....	0	
Do.....	do.....	Margosatubig.....	0	
Do.....	Agusan.....	Carmen.....	27	
Do.....	do.....	Ampayon.....	55	
Do.....	Cotabato.....	Kalamansig.....	40	
Do.....	do.....	Kiamba.....	68	
Do.....	Jolo.....	Laminosa.....	4	Based on 85 cases of all ages. All other examinations were made on school children below 15 years.
Do.....	do.....	Batobato.....	69	
Do.....	do.....	Gandasuli.....	13	
Do.....	do.....	Bongao.....	0	
Do.....	Misamis.....	Gusa.....	0	
<i>A. ludlowii</i> .....	Zamboanga.....	Petit Barracks.....	0	
Do.....	do.....	Talon-talon.....	0	
Do.....	Davao.....	Santa Ana.....	2	
Other species.....	Zamboanga.....	Tetuan.....	0	
<i>A. rossii</i> and <i>A. barbirostris</i> .....	do.....	Tumaga.....	0	One slightly enlarged out of 13 children examined.
Do.....	do.....	San Jose.....	8	
Do.....	Agusan.....	Butuan.....	0	
Do.....	do.....	Esperanza.....	0	
Do.....	Misamis.....	Lapasan.....	0	
Do.....	Jolo.....	Siasi.....	0	

The above table is a résumé of the data from 25 places, out of 40, representing six provinces in which both the predominant or only species of *Anopheles* found and spleen indices were obtained. The coincidence of *A. minimus* with varying degree of splenomegaly is very striking. With *A. ludlowii* in three places, only one splenic enlargement was found giving 2 per cent index in Santa Ana, port of Davao. One slightly enlarged spleen was felt out of 13 children, in one of the five schools examined in Zamboanga, an index of 8 per cent for the particular group and about 0.5 per cent of the total 176 children examined in five schools.

In view of the above findings, which of course is as yet not final, there seems to be a justification for the employment of

the so-called "Species Sanitation" or "Species Control," which has given very satisfactory results in recent years in the Federated Malay States (Doctor Wellington) and Java (Doctor Darling).

In the application of "Species Sanitation" in malaria control, the Philippine Health Service can save not only much time, labor and money, but will make possible its corporation in the present Philippine Health Service activities, at least in very many localities where *A. minimus* breeding places is limited to one or two streams.

#### SUMMARY OF SPLEEN AND BLOOD INDICES

Jolo: Of 8 places surveyed 5 places had malaria problems. The worst place was Batobato, a Colony of 138 Visayans, 69 per cent of whom were with splenomegally, and 23 per cent malarial (gamete) parasite carriers. The next is S. Ubian with 14 per cent splenogaly and 4 per cent parasite carriers; Gandasuli with 13 per cent splenomegally and 11 per cent parasite carriers; Tandubas with 6 per cent splenomegally and 4 per cent parasite carriers; and, Laminosa with 4 per cent splenomegally and 2 per cent parasite carriers.

Zamboanga: Seven places surveyed no problem was encountered. Malangas Coal Mine was closed before a survey could be made. In the town of Zamboanga, 176 from 5 schools of 5 different places were examined with only 1 with a slight palpable spleen and no parasite in their bloods.

Davao: Eight places surveyed, 7 had varying spleen indices from 2 per cent to 89 per cent, and blood indices from 2 per cent to 11 per cent. The nearer the places to the hills and mountains, the heavier the infection. In the Barrio of Santa Ana, port of the Town of Davao, 59 children were examined with 1 with splenomegally and no parasites in their bloods.

Agusan: Nine places examined only 3 present malaria problems-Ampayon, Carmen, and Santa Josefa with splenomegally ranging from 27 per cent to 55 per cent and blood indices from 4 per cent to 8 per cent.

Cotabato: Five places surveyed with the result that Calamansig and Kiamba were found to be the heaviest infected, with 40 per cent to 68 per cent splenomegally and 0 per cent to 22 per cent blood indices respectively.

Misamis: In three places 214, school children were examined with no splenomegally and no parasities in their bloods. These

data are not complete by any means, and, should, therefore, be added to from time to time. But, in general, the suveys were performed in supposedly infected places.

#### PROVINCE OF SULU

The undersigned arrived in Jolo on January 13 and left February 5, 1927.

The district health officer has sent Chief Sanitary Inspector Paniki for training in malaria control. Later dispensary attendant Garcia Laurel (a male nurse) arrived for training.

The district health officer with the inspector accompanied the undersigned to all probable breeding places on the Island of Jolo (towns, of Jolo, Indanan, Parang, Maimbung, and Roman-dier) and the inspectors were shown different types of breeding places and the character of Anopheline larvæ.

Two types of heavy breeding places (the Liguian stream and the Asturias salt marsh) were selected, larvæ were counted by dips and treated with road dust Paris green mixture (prepared by the inspectors under supervision using the dust blower and hand distribution. On the following day control dips in the places sprayed were made and no larvæ were found. This was done to impress on them the efficiency of the treatment. The entire time from January 13 to 23 was spent looking for breeding places, preparing road dust Paris green mixture and spraying. Later inspector Garcia of the town of Jolo was instructed by the trained chief inspector to prepare Paris green and charged with spraying it.

On January 24 we departed for Laminosa, Siasi, South Ubian, etc., with the two trained inspectors. Four barrels of green, blowers, screens, quinine, microscope, dippers, slides, etc., formed the equipment. In each place visited where control was justified the local sanitary inspector or dispensary attendant was taken to the breeding places, taught the preparation of Paris green and put in charge of the actual weekly spraying of breeding places in the residential districts and in a zone of 1½ kilometers surrounding it.

The towns of Jolo, Romandier, Laminosa, Tandubas, Batobato, and Bongao are now under control with approximately one tenth of the entire population of the province. The two trained field inspectors will extend to Cagayan de Sulu, Camp Andress and other places as soon as more Paris green arrive.



TABLE 1.—Summary of rainfall for 1926

Months	Lapac	Jolo
	mm.	mm.
January.....	82.0	329.9
February.....	3.0	30.4
March.....	74.4	3.0
April.....	37.8	112.0
May.....	54.4	292.0
June.....	264.5	112.7
July.....	131.1	100.0
August.....	150.1	117.6
September.....	156.0	83.0
October.....	197.4	99.5
November.....	225.1	117.0
December.....	104.4	817.5

TABLE 2.—Geographical data

Place	Climate	Rainfall	Approximate population under control	Industries	Topography
Jolo and Gandusuli	Warm, moist below typhoon belt.	Short dry season	5,000	Farming and fishing	Below hills brackish and fresh water swamps.
Sibutu.....	do.....	do.....	*4,000	Lumber, fishing, coconut and cane making	Flat corral islands; no fresh water.
Bongao.....	do.....	do.....	200	Fishing and some coconut	Rocky, hilly, little seepage and rain collections in rocks.
Lapac.....	do.....	do.....	*200	Farming.....	Hilly; 3 wells no streams; brackish water.
South Ubian.....	do.....	do.....	*5,000	Coconut and fishing	Flat corral island; no fresh water.
Tandubas.....	do.....	do.....	5,500	do.....	Flat corral island; no fresh water (control Tula another island nearby).
Laminosa.....	do.....	do.....	5,000	do.....	Flat corral island; no fresh water (control Sipanding and Mantata island of Siasi).
Siasi.....	do.....	do.....	2,000	do.....	Hilly; swamps formed by fresh water overflow from reservoir.
Batobato.....	do.....	do.....	150	Farming.....	Hilly; wells; see pages forming small clear water streams.

\* Not controlled.

Approximate population under control 17,650.

# LOCATION OF BREEDING PLACES AND SPECIES OF ANOPHELES JOLO

1. Liguian stream: clear water behind Philippine Constabulary Barracks of Asturias, running by the Chinese garden. From grassy edges with débris 25 *A. minimus* larvæ were identified. Fairly heavy breeding.

2. Hasaan stream: from behind the isolation hospital passing the town. "Quiapo" growth behind the hospital with muddy bottom mostly *A. minimus* and a lesser number of *A. barbirostris*.

3. San Raymundo swamp (Asturias) : right side of approach to Philippine Constabulary Barracks, clear water spaces from water reservoir of spring origin used for washing and bathing plenty of algæ, moss, and other vegetation, heavy breeding of *A. rossii*.

4. Asturias salt marsh: left side approach of the Constabulary Barracks with plenty of vegetation and algæ were found to be a heavy breeding place for *A. barbirostris* and *A. rossii*.

Busbus salt marsh: near the seashore just beyond Jolo Power plant, brackish water mixed with seepage of fresh water showed plenty of culex, stegomyia and *A. rossii*.

6. Gandasuli (Liang) : stream impounded, beyond the public school house showed few *A. minimus* below the impounding. The impounded water reaches behind the agricultural Nursery and has heavy vegetation and thick growth of "quiapo" breed plenty of *A. barbirostris* with few *A. minimus*.

#### MAINBUNG

Mainbung River was dipped up stream for a distance of about 200 meters without finding larvæ.

#### ROMANDIER

1. From Romandier stream about 100 meters from Philippine Constabulary Barracks 18 *A. minimus* 2 *A. barbirostris* were identified.

2. From a small stream behind the Philippine Constabulary Barracks an escape from water reservoir 9 *A. minimus* were found. A few *A. rossii* were found in a stagnant portion with deep muddy bottom and algæ.

3. From the water reservoir: filled with clear spring water and algae on the borders 14 *A. barbirostris* and 4 *A. minimus* were identified.

#### ROAD BETWEEN ROMANDIER AND JOLO

1. In Bandong stream few *A. barbirostris* were found.

2. From Palan stream about 12 kilometers from Mainbung and upper portion of Mainbung stream 20 *A. minimus* were found in heavy breeding among débris.

3. Samayan stream did not show breeding, but in large stone on the side was clear water collection much above the level of the stream (probably rain water) without any vegetation or moss on the stone, 3 *A. minimus*, 2 *A. barbirostris*, and 1 *A. rossii* were found in two dips.

## INDANAN AND ROAD TO JOLO

From Licup stream 13 *A. minimus* were identified. Stream No. 2 showed moderate *A. minimus* breeding. About 5 meters above this stream in a path was a clear water hole in the ground about one foot in diameter from which two dips revealed a *A. minimus* larvæ. The water was surely rain water as it was over a meter above the level of the stream and separated from it by thick bush.

Streams No. 3 and 4 also showed *A. minimus*. Stream No. 4 showed adult *minimus* like larvae according to the clypeal and submedian thoracic hairs, but had white transparent heads and no tergal plates. On feeding with baker's yeast the heads became black and opaque and typical tergal plates developed in 2 days.

## PARANG

The only Anopheles breeding was found in a clear salt water hole unaffected by tide near the seashore. They were *A. rossii*. There was heavy culex breeding in the other holes.

## PAGASINAN ISLAND

No breeding was found on this island just opposite the town of Jolo. The surrounding mangroves were examined including dips between the roots of the "bacawan" trees.

## ISLAND OF LAMINOSA

No breeding was found in this small flat corral island, without fresh water. The wells (brackish) showed no breeding. In another island about two kilometers southwest of Laminosa place called Sipanding where fresh water is brought to Laminosa, light breeding was found in the fresh water marsh. Here 8 *A. rossii*, 2 *A. barbirostris*, and 1 *A. minimus* were identified. A similar place Manta exist near Sipanding but was not visited.

## SIASI

The large fresh water marsh behind the wireless station of Siasi showed light breeding of *A. barbirostris*. This water is an escape from the water reservoir.

## LAPAC

The brackish water swamps around the Lapac Agricultural School including the mangroves showed no anopheles breeding although culex was abundant. We were told by Mr. Price that

the mosquito nuisance was being solved by filling with sand the many tree holes on the farm. Wells showed no breeding.

#### SOUTH UBIAN

A small low corral island, no breeding was found. No fresh water on the island.

#### TANDURAS

A small low corral island. Breeding was looked for in the salt marsh and mangroves behind the school house but proved negative. Rain water tanks were free. At Tula on the coast of the island about  $1\frac{1}{2}$  kilometers *A. rossii* was identified in brackish stagnant water by the shore. No breeding was found in fresh water seepage (Tula) from which Tandubas people get their water.

#### BATOBATO

Breeding No. 1 clear well about one-half meter in diameter with débris, 4 *A. minimus* were identified. Breeding No. 2 well 7 *A. barbirostris* identified. Breeding No. 3 seepage forming small stream with rocky bottom 12 *A. barbirostris* and 6 *A. minimus*. Breeding No. 4 well and seepage 11 *A. barbirostris* and 3 *A. minimus*. Breeding No. 5 Jungle seepage over rocks 200 meters from townsite, *A. barbirostris* 4, *A. minimus* 1.

An entire evening up to 11 p. m. was spent by three of us with flash-lights and searched 10 houses including chicken coops, banana trees and other vegetations around the houses for adult *Anopheles* without result.

#### BONGAO

A small rock island of about 1 kilometer circumference. Seepage and rain water in rock holes below the wireless station near the school breed *A. minimus*. Under a residential house this water runs in a small stream and several dips revealed 19 *A. minimus* and 1 *A. barbirostris*.

#### SIBUTU

Situated on the coast and no fresh water. No breeding was found. Two wells were examined with negative results.

#### SITANKAI

A small flat corral island. No fresh water. No breeding was found.

All larvæ were identified microscopically.

TABLE 3.—*Number of population of Sulu by municipal districts*

1. Jolo .....	5,810
2. Siasi .....	15,625
3. Bongao .....	1,979
4. Cagayan de Sulu .....	5,193
5. Tandu (Camp Andres) .....	3,920
6. Sitanki (Sibutu) .....	3,828
7. Simonol .....	5,455
8. Banaran .....	1,118
9. Balimbing .....	1,841
10. Tandubas .....	5,555
11. South Ubian .....	4,817
12. Tapul (Banting) .....	14,592
13. Parang .....	15,467
14. Silangkan .....	5,855
15. Pansul (Indanan) .....	6,441
16. Maimbung .....	8,085
17. Talipao (Camp Romandier) .....	3,485
18. Pata .....	6,855
19. Panamau (Kulay-Kulay) .....	6,882
20. Lu-uk (Pitugo) .....	9,532
21. Tonquil .....	1,648
22. Pangutaran .....	3,907
23. Lati .....	5,483
24. Patikul .....	6,180
25. Marungas .....	1,568
26. Guitong .....	1,645
27. Bato bato .....	138

NOTE.—Data furnished by the district health officer.

TABLE 4.—*Incidence and mortality of malaria in their respective districts during the year 1926*

Municipality	Number of cases	Number of deaths	Cases per 1,000 population	Deaths per 1,000 population
Jolo .....	1,514	14	260.59	9.31
Siasi .....	913		58.43	
Bongao .....	580		293.08	
Cagayan de Sulu .....	680	3	130.94	4.41
Indanan .....	50		7.76	
Camp Andres .....	474		120.92	
Batobato .....	353		2,847.82	
Sibutu .....	175		45.72	
Tubig Indangan .....	193	1	39.03	5.18
Tandubas .....	738	4	132.85	5.42
South Ubian .....	732		151.96	
Banting .....	429		29.39	
Parang .....	413		26.70	
Maimbung .....	488		60.36	
Romandier .....	219		62.84	
Kulay-Kulay .....	186		27.03	
Pitugo .....	326	1	34.20	3.08
Pata .....	134		19.53	
Tonquil .....	314		190.53	
Pangutaran .....	298		76.27	

NOTE.—N. B. Blank death columns mean no death reported, it being the Moro custom as yet, not to report natural deaths. Death reports are almost in all cases on Christians. These data were furnished by the district health officer.

TABLE 5.—Province of Sulu malaria case during 1926

Dispensaries	January	February	March	April	May	June	July	August	September	October	November	December	Total
Jolo.....	119	63	110	75	66	166	128	184	184	101	98	220	1,514
Siasi, Laminosa...	33	30	203	135	82	28	24	33	55	86	141	63	913
Bongao.....	51	87	57	56	94	31	...	74	...	47	...	83	580
Cagayan de Sulu..	50	74	77	36	67	69	81	34	...	43	76	73	680
Indanan.....	3	5	3	3	5	4	6	2	6	5	8	...	50
Camp Andres.....	64	109	47	79	21	24	5	25	24	25	20	31	471
Batobato.....	35	44	32	54	46	51	24	...	...	30	18	55	393
Sibutu.....	37	28	12	10	15	10	6	17	5	22	13	...	175
Tubig Indangan..	23	21	15	15	14	7	44	21	33	...	...	...	193
Tandubas.....	92	42	54	85	77	74	69	54	7	70	56	58	738
South Ubian.....	133	76	...	63	67	73	...	55	67	39	70	89	732
Banting.....	53	50	13	16	89	12	8	14	12	59	57	46	429
Parang.....	50	53	21	40	41	22	16	28	15	22	51	54	413
Maimbung.....	28	69	49	76	35	23	25	32	39	28	42	42	488
Romandier.....	18	13	35	7	19	10	14	11	18	24	32	18	219
Kulay-Kulay.....	20	10	17	18	27	25	22	20	8	19	...	...	186
Pitugo.....	...	47	29	68	15	19	30	15	6	20	7	70	326
Pata.....	13	8	9	11	5	12	9	15	15	4	11	22	134
Tonquil.....	13	7	50	42	19	23	41	26	29	30	34	...	314
Pangutaran.....	40	41	46	35	39	16	18	9	10	22	22	...	298

NOTE.—Blank months mean the attendant was out of station.

The number of cases include recurrences. Bongao records include quinine given out for prophylaxis reported as cases. The migratory (seafaring) habits of the Moros preclude accuracy of number of cases reported in each dispensary as the disease was often contracted in some neighboring island only to return home when already sick.

These data were furnished by the district health officer.

TABLE 6.—Malaria history splenic enlargement and blood findings in 388 cases, Province of Sulu

Places	Number examined	Number with history of malaria	Percentage	Number with enlarged spleen	Percentage	Per cent posit blood	Remarks
Gandasuli, Jolo.....	45	26	57.7	6	13.3	11	(1)
Sibutu.....	25	7	28.0	...	...	0	(2)
Bongao.....	7	7	100.0	...	...	0	(3)
Lapac.....	29	12	41.4	...	...	0	(4)
South Ubian.....	49	27	55.1	7	14.3	4	(5)
Tandubas.....	50	37	74.0	3	6.0	4	(6)
Laminosa.....	50	14	28.0	2	4.0	2	(7)
Siasi.....	48	10	20.8	...	...	4	(8)
Batobato.....	85	85	100.0	59	69.4	37	(9)
Total.....	388	225	58.0	77	30.0	...	...

<sup>1</sup> All school children, males 15 years and under except a child of 3 with fever and crescents; 2 spleens were just palpable, 4 were 3 to 4 finger breadths.

<sup>2</sup> Thirteen females 12 males, 6 to 12 years old.

<sup>3</sup> Eleven to 18 years old, all males.

<sup>4</sup> Fourteen to 26 years old, all males including two teachers.

<sup>5</sup> All school children, 2 females, 6 to 16 years old with 1 male adult and 1 ex-convict with palpable spleen; malaria according to him was contracted at San Ramon Penal Farm. Had malaria epidemic 2 years ago.

<sup>6</sup> Eighteen females, 6 to 14 years old, 3 male adult outsiders spleens slightly palpable. An adult Moro not included in this series with child showed malignant tertian rings and stippling of erythrocytes. Came sick from another island (Dondongan).

<sup>7</sup> All males 10 to 16 years old, students. Had malaria epidemic before.

<sup>8</sup> All males, 8 to 16 years old.

<sup>9</sup> Colony (all Christians except 1 Moro) all ages from 1 year and 3 months up, and all sexes, majority were with 70 per cent hæmoglobin by Tallqvist.

NOTE.—N. B. Except Batobato, Moro school children formed over 95 per cent of the cases examined. There is compulsory school attendance among the moros and sickness is the only legitimate pardonable cause of absence from school. It is therefore possible that malaria histories as given were exaggerated or fictitious.

## PROVINCE OF ZAMBOANGA

The undersigned stayed in Zamboanga during the following periods: between arrival from Manila and departure for Jolo

from January 9th to January 12th; between arrival from Jolo to departure for Davao from February 6th to February 15th; between arrival from Butuan via Misamis and Bohol from March 18th to March 24th, 1927.

During the first period of stay in Zamboanga anopheles surveys were carried with the district health officer, municipal health officer, the chief sanitary inspector and another inspector. Breeding places were mapped out by Mr. P. Baños and control started. In Zamboanga two sanitary inspectors spray the breeding places while in San Ramon Penal Farm a prisoner does it under the supervision of a "capataz." During the second period of stay all the slides gathered from the Province of Sulu were examined and data assembled. The third period of stay was used examining slides from the Provinces of Davao, Agusan, and the little material gathered in and around Cagayan de Misamis during the twelve-hour stop over of the boat. In a similar manner some dips were made in Mambajao and in a barrio of Cortes, Bohol.

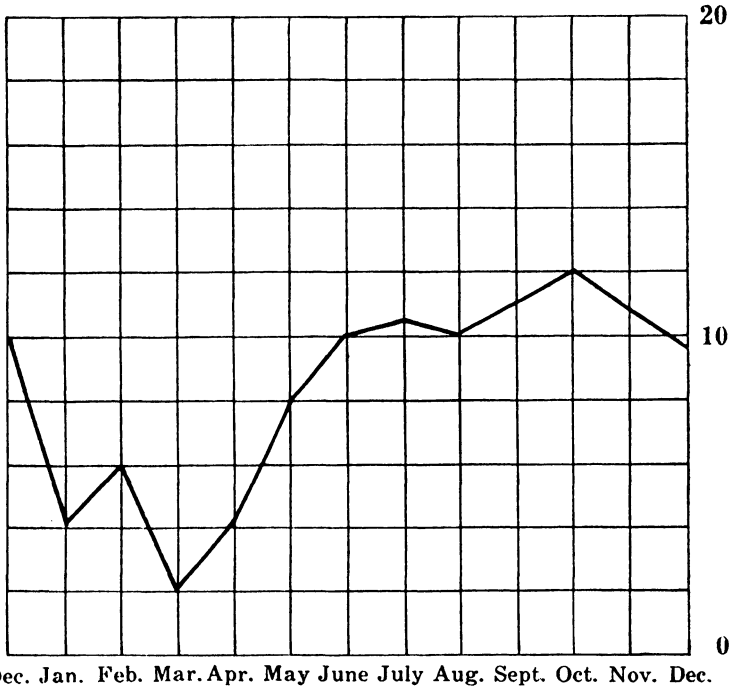
Table 1 shows geographical data on the places surveyed.

Table 2 shows the origin of material for the spleen and blood indices. In the town of Zamboanga 176 children were examined from five different districts (Tetuan, Tumaga, Talon-talon, San Jose, and Petit Barracks). Dr. C. B. Enriquez reported one slight splenic enlargement in San Jose School. The other schools were examined by Dr. T. J. Brennan with negative result giving a 0.5 per cent splenic and 0 blood indices for the whole town. The predominant Anopheles found in two of the above districts (Talon-talon and Petit Barracks) was ludlowii with rossii and barbirostris in three (Tetuan, Tumaga, and San Jose).

#### ZAMBOANGA

Place	Climate	Population approximately	Industry	Topography	Anopheles
Tetuan .....	Short dry season	2,000	Coconut and rice	Plain near hills, river	Barbirostris.
Tumaga .....	do .....	500	do .....	Plain near hills, river	Barbirostris.
Talon-talon .....	do .....	200	Salt and coconut	Salt marsh salt beds	Ludlowii.
San Jose .....	do .....	1,000	Coconut .....	Salt marsh ..	Rossii—Barbirostris.
Petit Barracks .....	do .....	500	Military reservation	Sea side salt marsh	Ludlowii—Rossii.
Lamitan .....	do .....	500	Coconut and sugar	Sea side near hills, stream	Minimus.
Margosatubig .....	do .....	1,000	Lumber and coconut	Coast near hills	Minimus.

## RAINFALL



Figures represent percentage of total yearly rainfall

TABLE 2.—Zamboanga

No.	Town or barrio	Number of children examined	Sex		Number with enlarged spleen	Percentage	Number of sample blood examined	Number of positive	Percentage
			Male	Female					
1...	Tetuan.....	66	53	13	0	0	66	0	0
2...	Tumaga.....	43	22	21	0	0	43	0	0
3...	Talon-talon.....	35	18	17	0	0	35	0	0
4...	San Jose.....	18	8	5	1	8	13	0	0
5...	Pet. Bar.....	19	7	12	0	0	19	0	0
6...	Lamitan.....	83	.....	.....	0	0	83	1	1.2
7...	Margosatubig.....	50	82	18	0	0	50	0	0

## PROVINCE OF MISAMIS

For the purpose of record this short preliminary report is submitted to be supplemented later by a more extensive survey. The district health officer was out on hookworm mission in the town of Misamis when Cagayan de Misamis was reached on March 16, 1927.



The municipal health officer Doctor Marfori with Mr. Creer accompanied the undersigned to three schools and at the same time searched for breeding places. In the afternoon, Doctor Marfori and a sanitary inspector were given practical demonstration on the preparation of Paris green and road dust mixture.

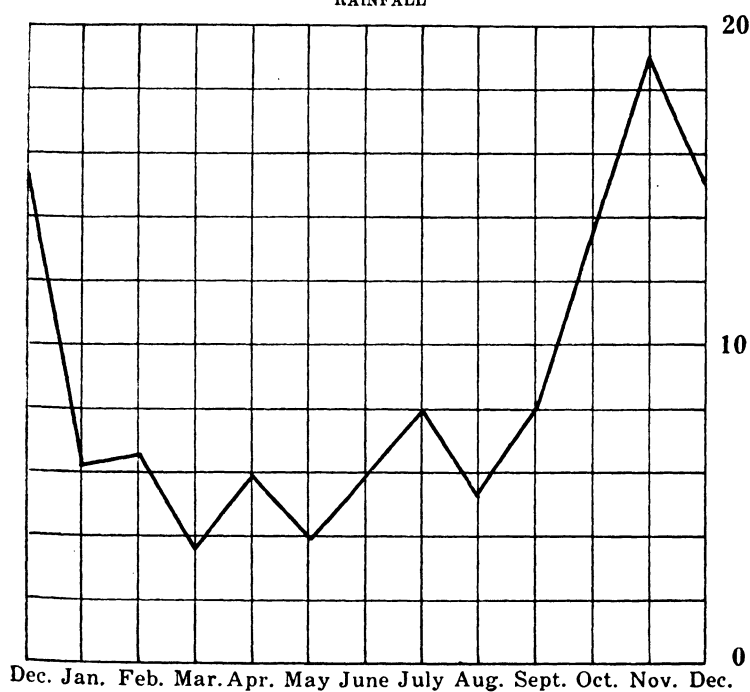
The geographical data and *Anopheles* species are shown in Table 1.

Spleen and blood indices are shown in Table 2.

TABLE 1

Place	Climate	Population approximately	Industry	Topography	<i>Anopheles</i>
Cagayan .....	Short dry season	5,000	Coconut, hemp, and salt	Sea side plain, river	No breeding.
Guza .....	do .....	500	Coconut and hemp	Sea side plain, stream	Minimus, lud.
Lapasan .....	do .....	500	do .....	Sea side plain, river and stream	Rossil.

RAINFALL



Figures represent percentage of total yearly rainfall

TABLE 2.—*Misamis*

No.	Town or barrio	Number of children examined	Sex		Number with enlarged spleen	Percentage	Number of sample blood examined	Number of positive	Percentage
			Male	Female					
1...	Cagayan.....	100	55	45	0	0	25	0	0
2...	Guza.....	64	30	34	0	0	25	0	0
3...	Lapasan.....	50	21	29	0	0	.....	.....	0

## PROVINCE OF AGUSAN

The district health officer of Agusan with his chief sanitary inspector met the undersigned in Veruela on February 7th. Six places along the Agusan River, two on the north coast of the province and one near the foot of the Surigao range were surveyed from February 7th till the 14th. The preparation and use of Paris green road dust mixture was demonstrated.

Table 1 shows the geographical data and *Anopheles* species found in the places surveyed.

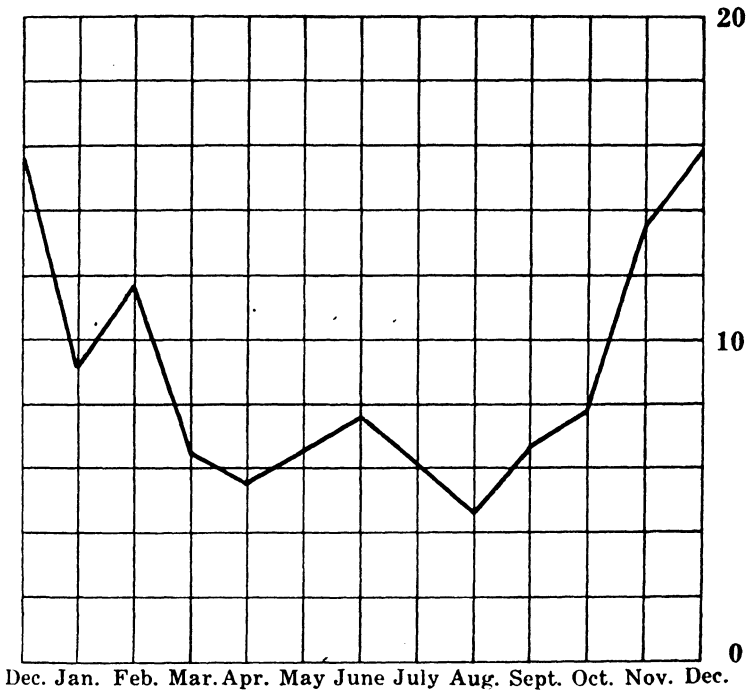
Table 2 shows the material on which the surveys were based with the resulting spleen and blood indices.

It will be noted that only three sparsely populated places showed considerable splenomegaly. All these places are near hills or mountains and not subject to floods as the other towns on the border of the Agusan River.

TABLE 1.—*Agusan*

Place	Climate	Population approximately	Industry	Topography	<i>Anopheles</i>
Santa Josefa.....	No dry season	300	Hemp.....	Agusan Valley, lowland stream	No dips, rains, and floods.
Veruela.....	do.....	800	do.....	Agusan Valley, lowland	do.....
Talacogon.....	do.....	2,000	Hemp and coconut	do.....	do.....
Carmen.....	do.....	400	Coconut and lumber	Sea side near mountains	Minimus.
Butuan.....	do.....	4,000	Hemp, coconut and sago	Agusan valley, lowland	Barbirostris.
Esperanza.....	do.....	500	Hemp and sago	do.....	Barbirostris.
Banza.....	do.....	500	Hemp, coconut and sago	do.....	None found.
Ampayon.....	do.....	200	Hemp and coconut	Agusan valley near mountain stream	Minimus.
Buenavista.....	do.....	1,000	do.....	Sea side, near hills, stream	None found.

## RAINFALL



Figures represent percentage of total yearly rainfall

TABLE 2.--*Agusan*

No.	Town or barrio	Number of children examined	Sex		Number with enlarged spleen	Percentage	Number of sample blood examined	Number of positives	Percentage
			Male	Female					
1.	Santa Josefa.....	49	24	25	17	34	49	4	8
2.	Veruela.....	45			0	0	45	0	0
3.	Talacogon.....	50	30	20	0	0	50	0	0
4.	Butuan.....	100	47	53	1	1	49	0	0
5.	Carmen.....	65	33	32	18	27	50	2	4
6.	Esperanza.....	30			0	0			
7.	Banza.....	50	17	33	2	4			
8.	Ampayon.....	42	25	17	23	55			
9.	Buenavista.....	61	29	32	1	2			

PROVINCE OF DAVAO

The part of Davao was reached early on the 17th of February. At 10 a. m. in company with the district health officer and chief sanitary inspector the undersigned left for Santa Cruz, Digos, Padada, the hemp and coconut plantations in Daliao of Talomo and Tugbuk. Whenever necessary spleen examinations were

done and blood smears were taken from school children under 15 years and breeding places looked for. The laborer furnished by plantation or local sanitary inspector was given field instruction in spotting *Anopheles* larvæ, the method of preparing the dust Paris green mixture and its use. At least 25 kilos of Paris green was left in each control area. By February 28th the time undersigned left for the interior of the province there were 15 control areas established along the west side of the gulf. All plantation managers were very eager to coöperate and furnished the necessary labor. Monkayo (Camp Kalaw) was reached after 5 days' hike (March 5). In view of the heavy rains and floods no dips were made for larvæ. However, school children were examined and smears taken in some of the barrios.

Table 1 gives the geographical data and species of *Anopheles* found in the different places surveyed.

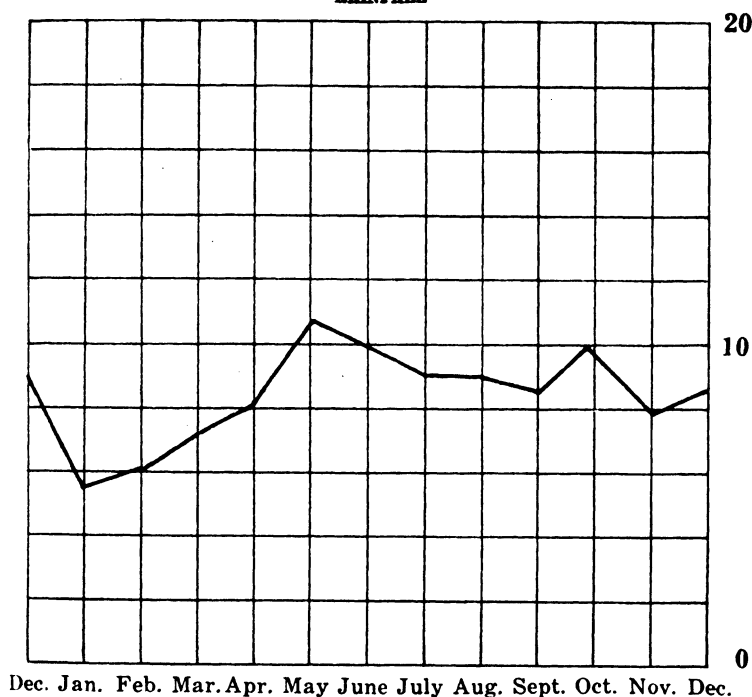
Table 2 gives the material on which the spleen and blood indices were based.

It will be seen that the splenomegaly in the province is common and the index very high in some places. Santa Ana the port of Davao showed only one child out of 59 with enlarged spleen. The district health officer who is now acquainted with the work will continue the survey, extend the control, and report from time to time. Mr. Bendijo, a graduate nurse and laboratory technician, is the chief sanitary inspector for the province and puts his entire time in the field checking control laborers and searching breeding places. He is well acquainted with larval identification. In view of the large number of expected control areas to be established (68 corporations and about 15 municipal districts) another malarial control field inspector will soon be assigned.

TABLE 1.—*Davao*

Place	Climate	Population approximate	Industry	Topography	<i>Anopheles</i>
Daliao .....	Short dry season	1,000	Hemp and coconut	Hilly, east side of Apo range	Minimus.
Santa Cruz .....	do .....	1,000	do .....	do .....	do .....
Digos .....	do .....	800	do .....	do .....	do .....
Tugbuk .....	do .....	500	do .....	do .....	do .....
Santa Ana .....	do .....	500	Commercial.	Sea side flat brackish water mangrove, swamp	Ludlowii.
Macgum .....	No dry season	300	Hemp and coconut	Hilly, Tagum River, Valley	No dips, a <sup>n</sup> s and floods.
Camansa .....	do .....	500	do .....	do .....	do .....
Bankerohan .....	do .....	1,000	do .....	do .....	do .....

## RAINFALL



Figures represent percentage of total yearly rainfall

TABLE 2.—*Davao*

No.	Town or barrio	Number of children examined	Sex		Number with enlarged spleen	Percentage	Number of sample blood examined	Number of positives	Percentage
			Male	Female					
1	Daliao.....	50			2	4	50	0	0
2	Santa Cruz.....	42	30	12	4	9	42	1	2
3	Digos.....	26	12	14	6	23	26	3	11
4	Tugbuk.....	51			12	24	51	50	0
5	Santa Maria.....	59	38	21	1	2	59	0	0
6	Macgum.....	26	21	5	15	58	26	3	11
7	Camansa.....	46	33	13	41	89	40	3	7
8	Bankerohan.....	34	20	14	29	85	34	4	12

## PROVINCE OF COTABATO

The undersigned did not visit this province due to lack of time and due to the presence there of Mr. Mallari and latter Doctor Brennan.

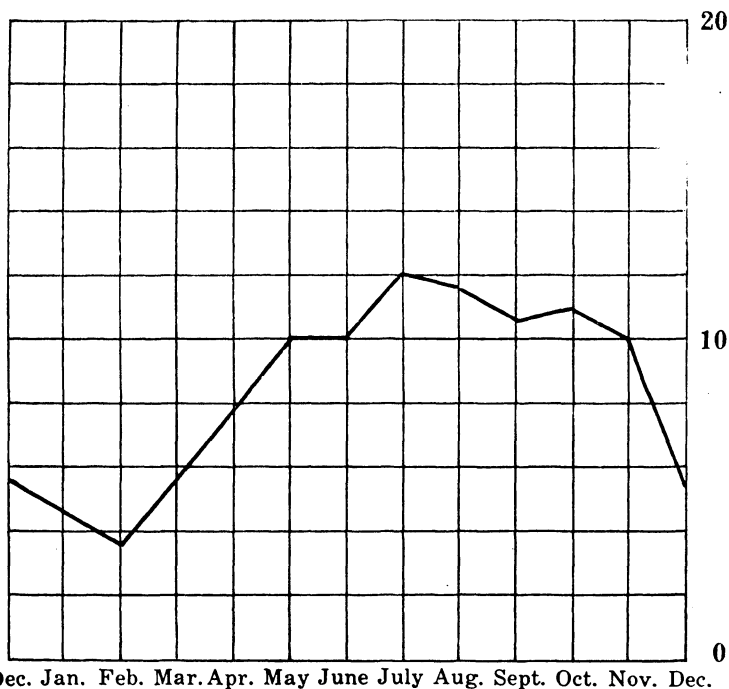
Doctor Brennan returned from Cotabato on March 21st with some 150 slides from 5 different places supposedly malarious. Table 1 shows the geographical data and species of *Anopheles* found. Mr. Mallari forwarded to Manila a large collection of larvæ.

Table 2 shows the spleen and blood indices.

TABLE 1.—Cotabato

Place	Climate	Popula- tion approx- imately	Industry	Topography	Anopheles
Kalama sig.....	Short dry season	500	Coconut .....	Costal near hills, streams	Minimus.
Milibuk .....	do.....	100	Lumber.....	Coastal	Do.
Kiamba .....	do.....	500	Coconut .....	Coastal near hills, streams	Do.
Salunayan.....	do.....	100	Rice and to- bacco	Valley low	
Culanan .....	do.....	100			

RAINFALL



Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

Figures represent percentage of total yearly rainfall

TABLE 2.—Cotabato

No.	Town or barrio	Number of chil- dren ex- amined	Sex		Number with en- larged spleen	Per- centage	Number of sample blood ex- amined	Number of posi- tives	Per- centage
			Male	Female					
1...	Kalama sig.....	60			24	40	60	0	0
2...	Milibuk .....	8					8	0	0
3...	Kiamba .....	41	24	17	28	68	41	9	22
4...	Salunayan .....	23						0	0
5...	Kulanan .....	15							

## THE ENGINEER'S PART IN MALARIA CONTROL

By LUIS CLAUSTRO

*Assistant Sanitary Engineer*

In order that the present work would be of some benefit in the sense that it may serve as a guide to our health officers who are actually doing some works in an effort to control malaria in their localities as well as to those who might be interested and are intending to solve their problems on malaria, it is deemed convenient not to limit ourselves to describe only those measures or works in which the services of an engineer are truly needed, which is our main object, but also to include the others which were found to have practical application.

Since malaria is caused by the presence of certain parasites in the blood which are acquired not by drinking impure water, nor eating bad food, or overworking, but only through the bite of an *Anopheles* mosquito rendered infective by having fed on a man infected with malaria, if: (1) the parasites in the human blood are killed, or (2) the access of *Anopheline* mosquitoes are prevented, or (3) these mosquitoes are exterminated, it is obvious that malaria will not propagate. Therefore, by carrying out perfectly either of these methods, the disease will be controlled. Let us consider them successively.

### KILLING THE PARASITES IN THE BLOOD

This was probably the first practical measure used for malaria prevention after the discovery of the cause and mode of transmission. Many kinds of drugs were tried, but none except the quinine rendered encouraging results. In malarious countries, such as Italy, Greece, Algeria, etc., where quinine was systematically used as a preventive, death rates were reduced from 50 to 25 per cent of the rates previous to the adoption of this measure. Encouraged by these results, the malaria control workers in the United States also tried to solve their problems on malaria by means of this method, and having been crowned with success in the majority of cases, they did not hesitate to establish a standard treatment based upon their experiments, which is now universally followed with slight amendments.

The dosage which should be adopted in the Philippines in accordance with Circular No. 136 of the Director of Health is tabulated as follows:

	1 year	3 years	6 years	10 years	15 years and over
Prophylaxis: One dose a day between 5 and 6 p. m.	0.5 grain or $\frac{1}{10}$ tablet	1 grain or $\frac{1}{5}$ tablet	2.5 grains or $\frac{1}{2}$ tablet	5 grains or 1 tablet	10 grains or 2 tablets.
Treatment: (1) Three doses a day at about 6, 8 a. m., 1 p. m. and 5 p. m.	1.5 grains or $\frac{3}{10}$ tablet	3 grains or $\frac{3}{5}$ tablet	7.5 grains or $1\frac{1}{2}$ tablets	15 grains or 3 tablets	30 grains or 6 tablets.
Prevention of relapse: One dose a day between 5 and 6 p. m.	0.5 grain or $\frac{1}{10}$ tablet	1 grain or $\frac{1}{5}$ tablet	2.5 grains or $\frac{1}{2}$ tablet	5 grains or 1 tablet	10 grains or 2 tablets.

NOTE.—The quantity given in each column under treatment is the quantity for the day and not for each dose. Divide by three, the number of doses to be taken during the day, to obtain the amount required for each dose.

It is not intended that the tablets must be divided with absolute accuracy. In order to obtain the small doses for young children, the tablet may be crushed and the powder be divided into 5 or 10 (according to the fraction required) little piles of about equal size. It is also possible to cut the tablet with a knife into 2 or 5 or 10 pieces of fairly equal size.

To speed up the initiation of therapeutic control quinine may be administered intramuscularly or intravenously, but due to probable dangers of depression of blood circulation, disagreeable and nervous phenomena and local necrosis and sloughing at the point of injection, these methods of administration should be resorted to only in those cases in which oral administration is impracticable for some reasons.

From the economical point of view, the adoption of this measure could not be recommended for large communities except as a supplement for curing the human sources of infection in spite of so effective results that may be obtained. Anyway, it should be remembered that control projects carried along this line, may fail, as it happened in other countries, due to one or a combination of the following causes:

- Failure of people under treatment to take quinine as required.
- Too long intervals between administrations.
- Use of practically insoluble tablets.
- Use of very small doses of quinine.

#### PREVENTING THE ACCESS OF ANOPHELES

The prevention of the access of the Anophelines also includes, even without desiring, the prevention of the access of the mosquitoes belonging to other genera, in such a way that protection not only from malaria, but also from the other mosquito-trans-



mitted diseases may be attained. This may be done in three ways:

1. By using mosquito repellants.
2. By using mosquito nets.
3. By screening the houses.

These being more or less individual means of protection the results will depend much on the habits of the people using them.

#### MOSQUITO REPELLANTS

There are two classes of mosquito repellants: (a) *personal repellants* or those which may repel away the mosquitoes from the persons, and (b) *house repellants* or those that may drive or keep them out of the houses.

aa. *Personal repellants*.—The personal repellants are generally applied to the skin, clothes, pillows, bed clothings, slippers, shoes, etc. Their effects are very transient because of their volatility and, therefore, the application should be oftenly repeated, causing thereby too much inconvenience, and yet the results are very doubtful. The substances used for this purpose are: oil of citronella, oil of eucalyptus, petroleum, powdered sandal wood, naphtalene, camphor, sulphur, garlic, mixture of tar, oil and quassia, and mixture of naphtalene and camphor. Hands fans and tobacco smoke may offer some kind of protection when they are in use.

bb. *House repellants*.—When smoke is produced abundantly in the house the mosquitoes may be driven out or may be killed through asphyxiation if they could be confined in a place where they cannot escape. The effect would be certain, but that it lasts too short and is in itself a nuisance is also true. In fact, chemical substances with smokes not obnoxious may be available in the market, but their daily use would be too expensive.

Creosote oil painted on the walls and ceiling of the houses may also keep mosquitoes outside the house. Enough quantity should be applied per unit surface in order to make it effective, but not so much as to render it objectionable. This means of malaria prevention would be ideal for the Philippines particularly for our rural communities, but its practicability on bamboo houses remains yet to be confirmed so that experimentation on this line may be warranted and is therefore suggested.

Smudges of rags, leather, and feathers were also used almost universally by the colored people in the United States during sleeping hours to protect themselves from mosquito bites.

*Mosquito bars.*—Good and well arranged mosquito bars, when properly used, furnish us sufficient protection from mosquito bites and, consequently, from malarial infection. Of course it gives no protection until one has gone to bed, but fortunately this is the time when the exclusive agents, *Anopheles* mosquitoes, become very active. Without doubt the use of mosquito bars is the cheapest and simplest effective method for individual malaria prevention, but due to our tropical climate, it may take a very long time to get our people accustomed to using it, especially during summer months. Health education is undoubtedly our strongest helper for this task.

By “good and well arranged bar” we mean one that is made of fine bobinet, with no holes, long and large enough and not having slit at the side. By “properly used” we mean that the bar must be tucked under the mattress or mat all around, that no part of the body must come in contact with it and that it must be lifted as seldom as possible.

*Screening.*—If the mosquito bars could furnish us certain protection, then by screening the houses a still higher degree of protection could be obtained. This is an anti-malaria measure applicable particularly to isolated dwellings, but its applicability is limited only to strong material constructions for which reason it is out of consideration for bamboo or light material houses. It has also the disadvantage of interfering natural light.

Although screening is an accessory to sanitary building construction which belongs to the engineering field, we believe anyone can do it as well by following up the suggestions given below.

Screen all doors and windows communicating outside and all verandas used as a sitting room at night.

Use the largest mesh compatible with exclusion of mosquitoes so as to keep out the least air and light possible. For all purposes the best size is the 18-mesh. However, a carefully painted 16-mesh wire netting is practically equal to an 18-mesh and is preferably used because the paint serves also as a strong preservative against the weather. A 14-mesh netting may also be used, but it should be painted sufficiently thick.

Galvanized iron nettings are more economical than bronze or copper, but will not last as long as the latter.

All doors should always and invariably open outward so that the mosquitoes resting on them would be driven away

rather than introduced, when they are opened. To avoid warping as far as possible, the frames should be of first-class and well seasoned wood in sufficiently large pieces (1 to 1½ inches thick by 2½ to 3½ inches wide) and well braced. The doors must shut against battens at the top, bottom and both sides. The bottom batten may be beveled to the floor at the inner side to facilitate sweeping, but the outer surface should be perpendicular. Lest warping occurs which is very likely, a strip of light canvas one inch wide may be tacked at the surface around the top and one side of the door to cover any opening existing. From the bottom to the level of one's hand in opening the door, the screening should be protected from pushes or kicks by covering the inner side with a coarse screen (one-fourth inch mesh) or by setting strips of wood two or three inches apart over the same portion. Springs to close the doors certainly and quickly, and proper fastenings to hold them secure against the wind, should also be provided. Stops should be placed to prevent too wide opening of the doors, and to give the springs longer serviceability.

The screens for windows can be made movable or immovable. When it is desired to have them movable we can hinge them, as are doors on the window jambs, or cover the window opening with two separate sashes, upper and lower, which could be made to slide downwards or upwards respectively, in a fixed groove cut on the jambs or with a groove in themselves sliding over a fixed guide. In these latter cases the lower frame of the upper sash and the upper frame of the lower should fit tightly on each other when closed, so as to remove the possibilities of mosquito entrance. When the screen is stationary, the screening can be economically made by tacking the wire netting directly on the window jambs and then covering the edges with battens, although the use of screwed and removable frames is more advisable. The screens should be put outside the windows so that they will not be opened in closing the windows.

In screening verandas, frames are not needed, but where frames are used the usual method of attaching the netting should be adopted. This method consists in cutting the netting large enough to fit in a groove cut on the inside edge around the frame, bending it at right angles to come plush with the surface and securing it by a square beading pressed down in the groove and mailed.

Torn wire screens are repaired by placing over the torn opening a small piece of wire netting cut to size which is fixed into place by sewing or lacing with a strand of the wire.

It is not sufficient, however, to screen the door, windows, and verandas. Other openings, even too small, should be looked for and closed tightly so as to deprive the mosquitoes from any possible entrance, otherwise the house would only be a trap.

## KILLING THE MOSQUITOES

### A. AT THE AËRIAL STAGE

The importance of killing the adult mosquitoes, even only those in and near the dwellings, which are likely to be the contaminated ones, is obvious. The simplest manner of doing this would be to trap or poison them, but unluckily this is not yet the time in which a means of attraction has been discovered. For this reason, the measures of catching, trapping, and fumigating are more in the order of suggestion than of practical and economical use ready for practical use. Let us consider, however, the measures that we know.

1. *Catching*.—Done by hand with any large-mouthed tube with cotton soaked with chloroform in the bottom, or with nets when catches are to be made at high points. A very slow and tiresome procedure, but may be made efficient if complete daily catches of anopheles could be made either as they enter or as they leave the house.

2. *Trapping*.—Very unsatisfactory due to the fact that no bait is known to attract them in the trap. There is a suggestion to use a large trap into which the mosquitoes are driven from the bushes, but this is a difficult and uncertain proposition.

3. *Fumigating*.—It is essentially necessary to have the room air tight, not only by closing all windows, doors, and other openings, but also by pasting strips or sheets of paper to separated joints, cracks, etc., so that neither the mosquitoes to be killed nor the fumes for killing them can escape. Hanging clothes should be taken out and the furniture should be moved away from the walls so that the fumes can freely penetrate to all mosquito hiding places. Obviously this method is applicable only to very few constructions, to inconvenient, difficult and expensive for routine use.

Sulphur, pyrethrum, or phenol-camphor burnt in sufficient quantity, for a period of two or three hours, kills mosquitoes effectively.

We may obtain help from our friends, the bats, house lizards, and dragon-flies, but they are difficult to keep and are themselves more or less a nuisance.

## B. AT THE AQUATIC STAGE

It is already a universal practice for the control of malaria to aim the fight against the *Anopheles* larvæ, due to the fact that it may be carried on cheaply and effectively without causing particular inconvenience to the people, that no great efforts are exerted in locating the larvæ, that many larvacides are available, that one knows how soon should he repeat his operations, that natural enemies can be used, and that considerable permanent works can be done in eliminating breeding places. From the standpoint of economy, however, works on this line should be applied only to limited areas where fairly large populations are concentrated. Its greatest disadvantage is the necessity of a long and continuous work before the real effects could be felt due to relapses from old infections.

The possible methods of attack known at present may be classified into: (a) Direct measures or destruction of the larvæ, and (b) indirect measures or destruction of their breeding places.

### (a) DIRECT MEASURES

Under this division are included all those measures aimed directly against the larvæ, such as (1) Use of larvacides, and (2) use of natural enemies.

(1) *Use of larvacides*.—This method has become the bulwark of mosquito control due to the proven effectiveness and cheapness of certain larvacides. Its whole success or failure depends, respectively, upon an intelligent or an incompetent supervision. Although good results may be obtained by treating just only bodies of water where the larvæ of the most dangerous species of malaria mosquitoes are usually found, for most effective results, it is suggested that no places should ever be omitted unless one is sure that actually there are no broods therein. The larvacides should be applied over those portions of the breeding places where the larvæ could stay such as, the edges, on and around floatage and debris, around projecting stones, at the vegetations, etc., and the application should be repeated at intervals not so long as to allow the new larvæ to hatch nor so short as to consume unnecessarily the larvicides.

Untiring efforts were and are still being exerted to discover the larvicide which combines effectiveness with cheapness. Soluble poisons as soap, nitre-cake, creoline, and other creosate and carbolic compounds may be made effective, but only after the volume of water to be treated has reached certain degree of concentration. Use of these classes of poisons is not therefore cheap and not applicable to running water and renders the treated water unfit for animal drinking. It may be, however, of some application for small and undrainable artificial breeding places.

Oils of various sorts were employed with better results. At first they were applied straight, but due to certain defects found in each, mixtures of two kinds with compensating properties, that is, the defects of one are corrected by the other and vice-versa, were tried and in such forms are oils used nowadays. The best mixture which has been found so far, is that of kerosene with crude or fuel oil. No definite formula could be given as this is usually left to the discretion of the user. Probably, the most satisfactory, kerosene and oil mixture is one that is nearly black in color and slightly thicker in consistency than kerosene.

Oil is applied in one of three ways depending upon the nature of the breeding place to be treated.

On swampy areas, pools, hoof-prints, and other collections of standing water, sawdust soaked in the mixture for a period of twenty-four hours is used, and is applied by throwing it broadcast over the surface.

On narrow streams and ditches with a fairly good current, the mixture is applied by means of drip cans placed at convenient intervals on a secure stand three or four feet high above the water. Different types of drip cans may be devised, but the two most generally used are described as follows: One is constructed from a 5- to 10-gallon can provided with cover, in whose bottom a hole is made with 2 or 3 inches long round nail through which (hole) the same nail is inserted after having wrapped a wad of loose cotton just below its head. The flow of oil is regulated by pulling downward or pushing upward the point of the nail.

The other type is composed of a similar can, but instead of the nail an opening is made on one side 2 or 3 inches above the base over which a thin metal flat-wick holder is horizontally attached. A lamp wick sufficiently small to fit loosely in the holder is inserted into the opening. Water is poured up to the

level of the opening, and the can is then ready to receive the oil. The flow is regulated by compressing or widening the wick. Drip cans may be substituted by bags filled with the same oil-soaked sawdust mentioned before.

All other breeding places not yet mentioned are more easily treated by using knapsack sprayer pumps or the ordinary disinfecting pumps.

It should be borne in mind that the effect of oil is suffocation so that whatever may be the method of application adopted, it is always necessary that a uniform, continuous, complete, and sufficiently thick film of oil be produced throughout the whole course or surface of the breeding places for a period of at least 12 hours, for which the breeding places should be cleared from all vegetation, and that the treatment should be so oftenly repeated (generally once a week) so as not to allow the mosquito larvæ to pupate.

Oil is very extensively used because it is a very efficient larvicide and has the advantage of killing all kinds of larvæ. It is however expensive and of difficult application, and renders the water objectionable for drinking.

Observations on the habits of *Anopheles* larvæ opened the way towards the discovery of the famous Paris green, the simultaneously cheapest and most effective larvicide ever discovered up to the present time, as far as *Anopheline* larvæ are concerned.

The larvæ of *Anopheles* lie at the surface of the water, and in feeding turn the head half-way around into such a position that the feeding brushes carry to the mouth any surrounding particles laying at the surface tension layer of the water which the larvæ swallow indifferently, whether they are food or poison, so long as they are small enough to enter the mouth easily.

Roubaud, a French malaria-researcher, was perhaps the first to experiment with fine powders to poison *Anopheles* larvæ. His success with trioxyme thylene and paraformaldehyde was confirmed by the Americans who have found that indeed these powders were very toxic to *Anopheline* larvæ both in laboratory and in field tests. In spite of this, these Americans were not completely contented with the poisons of Roubaud and searched for other substances which would be still cheaper and more poisonous. After a trial of a great variety of substances they came to the conclusion that Paris green was the most effective, and since then, they began to introduce its use which culminated into the present universal adoption of this larvicide.

Only very small doses of Paris green are necessary to poison larvæ. It is, therefore, absolutely unnecessary to use it straight, on the contrary, it should be diluted with a large proportion of sieved inert dust preferably road dust containing some clay. The ordinary proportion of dilution is one part Paris green to 100 parts of dust. The best thing to do, however, is to determine the proper dilution as this may change in different localities due to different local conditions, by using smaller quantities of poison at first and to check up on the results, increasing the quantity only when it proves necessary to do so.

The poison may be thrown by hand or may be distributed by means of a duster. It should be applied only at the right portions and not at the center of the breeding places. Bare portions with swift current may be omitted.

The frequency of treatment should depend upon the length of period of development from laying of egg to hatching into pupa. All that is necessary is to impede the larvæ to become pupæ as in this stage Paris green is not effective anymore. It would be wise, therefore, to make a test on a given area to determine how long will it take from the treatment day in which all larvæ have been thoroughly destroyed to the time in which pupæ appeared. The usual interval of application is every seven days, subject to change whenever required.

The advantages of Paris green over oil are its cheapness, portability, ease of distribution, possibility of being used over areas of difficult treatment does not make the water objectionable, and does not require a very thorough clearing.

The chief disadvantages are its ineffectivity to ova and pupæ of all kinds, and to larvæ of other mosquitoes than Anophelines, and the necessity of providing much dust.

(2) *Use of natural enemies.*—Control by the use of natural enemies is simply an upsetting of the balance which nature seems to have nicely designed for the preservation of species, by working in favor of one creature to the disadvantage of another. Certain plants as duckweed and chara; worms as the fresh water hydra and the fresh-water flat-worms; many bugs as the water striders, water boatmen, water beetles; larvæ as the dragon-fly larvæ and the cannibalistic mosquito larvæ; birds as the killdeer, yellow legs, and plugger; and many fishes are known to be enemies of the Anopheles mosquito larvæ, but due to slow reproduction or to difficulty of maintenance, only the fishes could be considered to have some importance in mosquito control. Unluckily, however, we do not have the right fishes



perhaps because they were not present when the Islands were separated from the main land. We have one fish—the “*Dermogenys viviparus* Peters” or the “Kansusuit” as it is called in Tagalog that has the necessary qualifications of being viviparous and surface feeder, but it lacks the important qualification of having rapid reproduction. An attempt was made to introduce the American minnow “*gambusia affinis*,” but the results were not satisfactory. They proved to be a very easy prey of our “dalag” which is found almost anywhere.

Thus we are deprived of a method which in the United States has been proven to be a very cheap and effective means for *Anopheles* mosquito extermination.

#### (b) INDIRECT MEASURES

We call indirect measures those which kill the larvæ not by intoxicating, suffocating, or devouring, but by destroying their breeding places or creating in them unfavorable conditions for the life of the mosquito larvæ, such as (1) Drainage, (2) filling, and (3) ponding.

(1) *Drainage*.—We all know that mosquitoes must necessarily pass the first stages of their life in water. Hence, without water, there will be no mosquitoes. It is, therefore, obvious that, after filling, an operation which is not always possible, in drainage we have the most reliable and most permanent method of control. It requires, however, an outlay of a more or less considerable sum of money, so that it is adopted only when it could be combined with agricultural purposes or when permanent control is desired and not when the control is intended to be only a temporary expedient. Drainage, as applied to antimosquito works, includes several features peculiar to mosquito control which are not included under drainage, as engineers define it. These features are intended to correct the bad conditions existing in the natural streams or water courses found in the locality to be protected so as to turn them unfavorable for mosquito breeding, and consist of cleaning the vegetation on both banks, removing the grass, sticks, stones, floating debris, and other obstructions that would interfere with the current, making the banks steep directly above and below the flow line, and training them, that is, grading the bed and straightening the course to insure a stronger velocity of flow, and, protecting the banks at sharp bends or other places where erosion may take place.

Training of streams, especially the straightening of the course, is not an easy task. It requires much work and money and should, therefore, be undertaken only when it is very necessary and could be done advantageously. Perhaps the first important feature to be corrected is the present grade of the stream bed. At times, it is difficult to effect proper regrading, particularly at places where streams widen out. To overcome this, a channel is reconstructed with boards or stone and filling in behind it. When there is a tendency to the formation of large pockets, which is very likely to happen where the bottom is soft, stone may be rammed in place to prevent further extension of the excavation. It will not be very infrequent to encounter temporary natural water courses having depressions or "pot holes," where water may remain and thus produce favorable mosquito breeding places. All such holes should be filled in with stone so that the water will drain off. Erosion of banks may also occur, particularly at sharp bends. To protect them a wall of stone should be constructed at the places of erosion.

The above works are only accessory to the true works of drainage. To design a drainage system in the most effective and economical way, a close and long study of the sources, positions, and movements of the water and also of the topographical and underground structure of the land to be drained is required. This study must continue until the construction of the drainage system has been practically completed, so as to note the effect of the drains, and correct any errors that may have been assumed in the design of the plan. The original plan should therefore be considered tentative, and subject to modifications as the work goes on.

The most ordinary areas encountered in practice to require drainage consist of temporary puddles, stagnant ditches, borrow pits, old wells, ponds, lagoons, lakes, streams, swamps, and marshes. It does not mean, however, that once we are confronted with such areas, drainage should be resorted to. Feasibility, advantage, and cost of operations as compared to other means of control should be considered first, before adopting such measures. In case drainage is decided upon the method of procedure should then be determined. Three methods are known—surface drainage, subsoil drainage and vertical drainage, according as to whether the removal of water is effected by open drains or ditches, subsoil drains, or vertical drains or wells.

*Surface drainage.*—Opening ditches is the simplest and most ordinary way of draining. But in order that satisfactory re-

sults could be obtained their location should be determined as accurately as possible for which reason, the source, position and movement of water and, topography and structure of the land should be studied.

Not infrequently swamps fed by seepage outcrops where breeding is very prolific, are encountered. The sole use of larvicides would involve too much and difficult work and results would be so unsatisfactory that it would be necessary to resort to drainage. In such case a main ditch or a series of such ditches, if the hillsides are steep should be dug along the foot of the hill approximately perpendicular to the seepage flow to intercept and collect the seepage water, and sufficient laterals to conduct the water therefrom to the place of disposal.

Other areas would not present so difficult and complicated a problem that the drainage work will be largely a matter of simple levelling and supervision of labor in which common sense and practice would be sufficient. In any case, however, the ditches should be as few and short as possible and should have clean sides, sloping edges, narrow bottoms, and sufficient fall. Sharp bends should be avoided wherever possible and laterals should be made to join the mains at an accute angle or curb.

To construct the system the location of the ditches should be determined first, next the lines and grades staked out, and lastly the ditch dug and graded. The ditching can be made by hand, by machine or by using dynamite. Hand ditching is the most ordinary method of procedure. It is advisable for small projects and where labor is cheap. The implements used are picks, shovels, and spades. Machine ditching has no application on subsoils and is very expensive. It should be used only for extensive projects. Ditching by dynamite excess the others in economy, effectiveness, and rapidity. It is especially applicable for swamps, marshes, and wet lands and is a good substitute to hand ditching where labor is scarce and dear, as it requires only a small gang to do the operation. The method usually employed for wet lands consists of planting one or two rows of dynamites along the proposed lines in holes, two or five feet deep and spaced at 18 to 20 inches apart. A detonating cap and fuse is then connected near the middle of the section planted and the whole land exploded at an instant by concussion. Débris is then removed and the ditch brought to its final shape.

The question of lining is next to be considered. When the soil is not hard enough to receive the erosive action of the flow on the bed and sides of the ditch, it would be more convenient

and economical to line it as then its maintenance will be considerably lessened. Lining is usually made of stone, concrete, and lumber. When stones are used for lining the interspaces should be chinked in with smaller ones and then sealed with cement mortar. Concrete lining should be placed only on well settled banks; otherwise, it will rupture by unequal settlement. A concrete layer 2 inches thick would be sufficient. Joints running across the ditch should be provided at intervals of 5 to 15 meters to prevent cracking by irregular contraction. Weep holes sloping toward the center of the bottom of the ditch should be made in the side walls before the concrete has set, wherever there is a possibility of collection of water behind to prevent possible disastrous effects. Key walls may also be installed to avoid side scours and under scourse particularly at sharps bends. Wooden lining has special application on places where the ground water is impregnated with alkali to such extent that concrete would be desintegrated.

The ditches, whether lined or not, should be maintained, that is, should be kept in proper condition and free from mosquito larvæ. They should be kept to the established grade and proper cross-section, obstruction and vegetation should be removed, and larvicides should be applied whenever necessary.

*Subsurface drainage.*—This method of draining consists of laying tiles under the ground, and may be used for two purposes: (1) To lower the water table so that pools formed on the ground surface will be absorbed rapidly, and (2) to intercept seepage outcrops, thus preventing them to reach and collect on the surface of the ground.

For the first purpose, tile drains ranging in diameter from 3 to 12 inches are laid closely end to end in the bottom of perfectly graded parallel narrow trenches about a meter deep and spaced from 15 to 50 meters apart according to the depth, nature of soil and local conditions. The most desirable slope is one-fourth of one per cent or more, but flatter grades may be permitted so long as the laying is well executed. Before filling up the trenches it is advisable to cover the joints with gravel so that the soil will not get in and silt the tiles. When the discharge is made into streams or ditches the outlet should be located above high water.

For the second purpose, tiles should be located above the seepage level at time of maximum flow and should run not parallelly, but approximately perpendicular to the direction of flow and the grade should be not less than one-half of 1 per cent.

The tiles should have open joints, that is, they should be laid about one-eighth to one-fourth inch apart, and the backfilling should be made of stones diminishing in size as it goes upwards and should extend about 5 centimeters more or less above the ground surface.

Subsurface drain has the advantage over surface drain in that it maintains itself, needs very little attention and requires no accessory treatment because the water is not exposed to the access of mosquitoes.

*Vertical drainage.*—When the place of disposal is too far, or surface drainage is not possible, or is difficult and expensive, drainage may be effected by boring holes or wells at the margin of the water to be drained until a water-bearing stratum is reached into which the water is conducted. The number and size of these wells should depend upon the volume of water to be drained, the nature of the underlying stratum and the rapidity with which the water must be drained. The boring outfits to be used should depend upon the material to be bored.

(2) *Filling.*—Lowlands where water collects, that are too low, too difficult or too expensive to be drained should be filled whenever practicable. On areas kept wet by seepage outcrops, the fill should not be shallow, otherwise the object would not be attained. Cinders, stones, gravel, sand, clay, earth, sawdust, rubbish, and garbage can be used for filling. When rubbish and garbage are utilized, they should be disinfected in place and covered with a layer of earth or clay in sufficient thickness, so that they may not be a source of odor and fly nuisances. Care should be taken that no depression that may hold water is left on the surface of the fills.

(3) *Ponding.*—Sometimes we may be confronted with a swamp which could not be treated satisfactorily with any of the above methods. In this case we have no other alternative than to convert it into a pond, which should be made an advantage rather than a menace, that is, should at least accomplish a reduction rather than an increase in breeding. To attain this, it is essentially necessary that the site be prepared, grubbed, and cleared, the pond be deep, has fairly sloping edges, and free from any vegetation. Ponding is made possible because mosquitoes do not breed in deep water. But, if mosquito breeding still occurs at the edges of the pond, larvicides should be applied as often as necessary or larvivorous fishes may be stocked, if available. The same precautions should be taken when ponds

are created for storing water for irrigation or water supply, for developing power or for any other purpose.

#### ACCESSORY MEASURE

*Health education.*—We should not lose sight of the value and importance of coupling health education with the measures adopted. It is a sure means not only to ward off erroneous and antiquated beliefs still adhered to by the mass and inculcate in their minds the true methods of causation and prevention of the malarial disease, but also to incite their interests to carry by themselves individually or collectively, malaria control works or at least to secure their coöperation, financial or otherwise.

The health education may begin from the young population by giving lectures and exhibits in schools. The school children thus taught will communicate what they learned to their parents and with this knowledge, they will not tolerate malaria to exist when they become the governing and voting population. The older population may be approached by means of newspapers, magazines, literatures, field demonstrations, placards, etc.

#### CONCLUSION

In the foregoing description of each of the possible measures for malaria control, it appears clearly that no engineering technique is required for their application, except in the case of adopting drainage measures and perhaps, a little in the screening of houses. Even when drainage is adopted the services of an engineer is not always required, because it is only for the complicated and extensive drainage projects where the engineer is absolutely needed; not to conduct the general malaria control works, however, but only to design and construct the proper drainage system, after which his services could then be dispensed with.

In conclusion, therefore, the engineer may have a very important part in the malaria control works, but his services are not indispensable for the successful prosecution of a malaria campaign.

#### REFERENCES

- Lectures on Malaria Control by Mr. Tiedeman.
- United States Public Health Reports—Bulletins and Reprints.

#### 4TH INDORSEMENT

JULY 21, 1927

To His Excellency, the GOVERNOR-GENERAL  
(Thru the Honorable, the Under Secretary  
of Public Instruction In Charge)

*Manila.*

*Subject:* EXTENSION OF SANITARY SEWER IN MANILA

1. Respectfully returned, with the statement that the stand taken by the Manager of the Metropolitan Water District relative to the withholding of the extension of the sanitary sewer system in the city can not in any way be concurred in by this Service. Progressive public health improvement can not admit delays, and any suspension of permanent works for the benefit of the public health is just a loss of time, and, therefore, should be taken to mean as a backward step in sanitation.

2. If the authorities of the Water District admit that the proposed work can be done, as they promise that it will be done, why not start now? Four years ago, it was assured that the water extension for the City would be completed or at least inaugurated during the present year (1927); but unfortunately, it has suffered an unexpected delay. Could not a similar difficulty on the extension works of the sewer system be possibly overcome by commencing the work as early as possible? After all, it would mean a saving of time, which in any health program counts very much as it will undoubtedly redound to the saving of many lives.

3. The statement of Manager Gideon to utilize septic tanks as a temporary solution of the problem, this Service regards, considering the average condition of the unsewered areas, as one of the most dangerous means of sewage disposal that could be used and, as far as this Service is concerned, the most troublesome and the most unsatisfactory substitute. It is one of the most dangerous, because the septic tank can not dispose sewage; the liquid resulting from its treatment is just as foul, if not more, as the exposed fecal matter; besides, it pollutes the ground; it breeds insects; and is a source of contamination, especially so in the districts where there are no adequate public surface drains into which the effluent is discharged; it is very unsightly, because of the stagnant and repugnant black pools which it forms in its surroundings. And it is unsatisfactory and troublesome, because it means a double expense to the house owners (cost of the tank and its cleaning, and later, the cost of sewer connection), and also a double work for the health official (first, the enforcement of the adoption of the tank in the meanwhile; and later, the compelling of the sewer connection, which in many cases has to be done through court proceedings).

4. Our past experiences in matter of sewage disposal in the residences located outside of the sewered area, have been not only the most unpleasant of our daily tasks (because of their always urgent character), but also the cause of many unnecessary friction with the public. Many times, they were due to lack of surface drainage; in some cases to the insufficiency of pails available for private use; in many instances, the cause was the absence of communication or a road between the residences and the existing streets and in some others, the lack of money for the construction of public midden sheds.

5. These difficulties could be solved, in our opinion, by extending gradually the sewerage system of the City. If this is done, the health officials assigned in Manila could devote most of their time to some other important details of the numerous sanitary work which could be done in a city like Manila, and what is more necessary is, to save the apparent unavoidable frictions arising between the house owners and the tenants and this Service, for which they are not nor this Service to blame.

6. Still, we should like to point out what we think is also an anomaly. Many times house owners—in some instances a group of them—request that the sewer line be extended so that they may connect their respective premises therewith. The Metropolitan Water District, instead of replying that the work can not be done at this time, as it is the apparent solution to the within basic communication of Major Hitchens, they are told that if they (house owners) are willing to bear the expenses of the sewer extension it would be done, otherwise they would have to await the completion of the extension of the waterwork. Many house owners, because of the desire to have better sanitary drainage, had to agree with this proposition which made possible the sewer extension works in the last three or four years. Perhaps, this policy adopted by the management of our Water District was influenced by the idea of Manager Gideon in his second indorsement hereon to the effect that in many foreign countries, “sewers are built by local assessment.” In our opinion, the above stand calls immediately for a reform of the present regulations. Indirectly, this Service which takes care of the sanitation of the City and of the health of the residents, is affected by the above policy, and many house owners, especially those not belonging to the well-to-do class, have already complained of unfair treatment.

7. We wish finally to invite attention to the attached tabulation which shows increases in the population and the built up portion of the City and the amount of work performed in the sewerage system for the last ten years.

JACOB0 FAJARDO  
Director of Health

*Table showing the population of the City of Manila, number of strong material constructions and number of septic vaults together with the extensions made on the sewerage system for the last ten years.*

Year	Population	Number of strong material buildings	Length of sewer extensions	Length of storm drains	Septic vaults <sup>1</sup>
			Miles	Miles	
1917.....	279,114	364	1.1	0.9	35
1918.....	233,244	478	0.4	1.1	53
1919.....	287,370	732	1.3	0.9	49
1920.....	291,498	1,057	0.9	1.4	86
1921.....	295,626	1,054	0.7	0.2	103
1922.....	299,554	1,491	10.1	0.256	135
1923.....	503,882	1,521	10.2	0.356	56
1924.....	309,010	1,323	10.4	None	164
1925.....	312,138	1,563	10.5	0.994	151
1926.....	316,266	1,656	10.4	None	148

<sup>1</sup> On these years the extensions have been made mostly at the expense of the house owners.

<sup>2</sup> In the majority of cases the tanks were installed on premises abutting in streets without artificial surface drainage or improved storm drains.



## MISCELLANEOUS

---

### RELIEF WORK IN CONNECTION WITH THE STEAMSHIP "NEGROS" DISASTER

A relief party consisting of Dr. Mariano G. Legaspi and nurses Leonila Capati and Lucila Angeles of this Service was sent to Bondoc, Mulanay, Tayabas, on June 2, 1927, leaving at 3 a. m. on the steamship *Y. Sontua* to render medical aid and nursing service to the survivors of the illfated steamship *Negros*. The party arrived in Bondoc at daybreak on June 3 whereupon the survivors were all brought on board the steamship *Y. Sontua* and given the necessary treatment. From Bondoc the steamship *Y. Sontua* proceeded to Masbate, Masbate, where the survivors were left with the relief party in the morning of June 4th. While in Masbate, the most serious patient was confined in the Puericulture Center, while the others were distributed in different houses. In the afternoon of June 5th, the survivors and the relief party were taken on board the steamship *Masbate* which brought them to Manila, arriving in the City on June 7, 1927, at 10 a. m. Upon arrival in Manila, the party's responsibility in connection with the relief work was turned over to Colonel Sweet of the Philippine Constabulary. Seventy-seven of the survivors were given treatment by the relief party. Doctor Gonzales-Sioco of this Service was also sent to render medical service to the survivors on the steamship *Masbate* which brought the survivors to Manila.

### AGUSAN

The Leper Collection Party arrived at the mouth of the Agusan River on June 25, and one leper was given to their custody.

### ANTIQUÉ

During the month, physical examination of all teachers attending the Division Normal Institute was performed. Eleven teachers were recommended to the division superintendent of schools for separation from the service, in view of the fact that they are suffering from contagious diseases, like tuberculosis of the lungs, mitral stenosis, and neurasthenia. They were advised to get medical treatment.

### BATAAN

A series of lectures was given by the district health officer on the occasion of the Teachers' Normal Institute of the province. The subjects dwelt upon were: A, B, C of Filipino Nutrition, Beriberi, and Tuberculosis of the Lungs.

The president, First Sanitary Division, is trying to secure the approval of the Bataan Sanitary Code in his jurisdiction. The Municipal Councils of Hermosa and Dinalupihan will take the matter at their proximate meeting.

**BATANES**

An extensive campaign against diarrhoea, enteritis, and dysentery was made during the month. Anticholera and antityphoid vaccinations in several municipalities were performed.

**BATANGAS**

The following were the chief activities during the month: General disinfection of public markets; house-to-house inspection for the detection of communicable diseases; 5,701 persons were given anticholera vaccination, 145 for mixed and 1,046 for pure typhoid; 95 Antipolo closets were constructed; 4 school buildings were inspected, and 474 school children were given physical examination.

**COTABATO**

Antivariolic and anticholera vaccinations were given to the teachers attending the Normal Institute as well as the school children.

**ILOILO**

A hookworm survey at Guimbal (Poblacion) gave the following results: 39 positive for hookworm; 61 per cent ascaris, 88 per cent trichuris, and 11 per cent for oyuris.

**NUEVA VIZCAYA**

During the Teachers' Normal Institute held at the capital, a series of lectures was given by the district health officer. Injections of mixed-cholera and typhoid vaccines were performed. A lecture on malaria was given and preventive measures discussed. Blood specimens were taken from all, including students. The children were examined for spleen-omegaly.

All sanitary inspectors were required to attend the demonstration on the use of Paris green mixture in connection with malaria control. Later, they were taken to a nearby brook where *Anopheles* wrigglers were identified and caught. Many different places in the town have been sprayed with the mixture. Sufficient quantity of Paris green has been distributed among the sanitary inspectors with instruction to spray them to all mosquito breeding places. Larvæ collection have been made in Bayombong, Solano and Pagabay with the chief of the Section on Malaria Control. All sanitary inspectors were instructed to collect larvæ from different places within their jurisdiction and to submit the samples to the Central Office.

**NEGROS OCCIDENTAL**

The Leper Collection Party headed by Doctor Chiyuto arrived at Bacolod on June 29. Five Lepers were collected.

The people of Sagay showed great appreciation for the successful result produced by the neosalvarsan treatment for yaws and for this reason a large number of people voluntarily presented themselves for treatment at the local dispensary.

## **IMPROVED METHOD OF TREATMENT GIVES GRATIFYING RESULTS**

As a result of the improved methods of treatment over 900 lepers have been already paroled and freed by the Health Service since its adoption in 1922.

### **BERIBERI EPIDEMIC IN BUKIDNON**

A very serious outbreak of beri-beri broke out in Bukidnon. In order to help control the disease, two hundred bottles of tiki-tiki extract and personnel from the Central Office were sent to the scene. The municipality of Malaybalay was the most stricken locality.

### **HIGH SCHOOL FOR LEPERS**

In response to the petition signed by 17 Culsion Leper school children asking for the establishment of a first-year high-school course in the colony, the Philippine Health Service has requested the Bureau of Education to help the leper children get a higher education by giving them the course required.

### **MANILA HOUSING PROBLEM**

The Council of Hygiene is now making an intensive investigation with a view to solving the housing problem in the City of Manila. The said body is expected to submit its recommendations to this effect. All the districts, particularly Tondo, Binondo, Santa Cruz, Intramuros, Paco, Sampaloc, and Malate, have been inspected in order to find out just what the most pressing needs of the homes are in connection with overcrowding, lighting, ventilation, and general sanitation of the houses and surroundings. With the exception of a few streets nearly all places in the city have been visited during the last four weeks.



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of June, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1927<sup>1</sup> BY NATIONALITIES

Nationality	Population
Americans .....	3,134
Filipinos .....	294,137
Spaniards .....	1,955
Other Europeans .....	1,126
Chinese .....	17,856
All others .....	2,186
<b>Total .....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo .....	80,715
2. San Nicolas .....	29,168
3. Binondo .....	17,625
<b>Total .....</b>	<b>127,538</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz .....	52,238
5. Quiapo .....	15,862
6. San Miguel .....	4,434
7. Sampaloc .....	39,698
<b>Total .....</b>	<b>112,232</b>
<b>No. III, PACO:</b>	
8. Port Area .....	4,816
9. Intramuros .....	14,625
10. Ermita .....	16,139
11. Malate .....	16,471
12. Paco .....	16,037
13. Pandacan .....	5,861
14. Santa Ana .....	6,675
<b>Total .....</b>	<b>80,624</b>
<b>Grand total .....</b>	<b>320,394</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS JUNE, 1927**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	757.63	27.4	32.7	6,7	23.0	3	29.6	29.7
11-20.....	58.88	27.7	33.6	13,15	23.3	17	30.6	30.7
21-30.....	57.26	27.4	33.3	21	24.0	22	30.6	30.7

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	83.8	88.8	1,2	80.2	6
11-20.....	82.2	84.5	19	79.4	15
21-30.....	84.5	88.6	26	79.3	21

Date	Prevailing direction	Wind			Atmometer <sup>2</sup> (Open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	SW quad	2,565.5	471.0	2	29.9	4.3	9
11-20.....	SW, E	1,524.0	283.5	11	32.3	4.6	11
21-30.....	SW	2,132.5	368.5	25	26.7	4.4	23

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	43 20	8 05	4	89.4	6
11-20.....	48 55	8 05	14	107.8	6
21-30.....	41 55	8 20	22	125.9	9

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	5	8	13	50.50
Filipinos.....	569	468	1,037	43.53
Spaniards.....	1	1	1	6.23
Other Europeans.....	1	1	1	10.81
Chinese.....	30	17	47	32.04
All others.....	3	6	9	50.12
Total and average.....	607	501	1,108	42.65

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MESEIC:</b>							
1. Tondo.....	145	123	268	16	4	20	288
2. San Nicolas.....	38	30	68	2		2	70
3. Binondo.....	30	16	46	1	2	3	49
<b>Total.....</b>	<b>213</b>	<b>169</b>	<b>382</b>	<b>19</b>	<b>6</b>	<b>25</b>	<b>407</b>
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	80	70	150	6	4	10	160
5. Quiapo.....	11	14	25		2	2	27
6. San Miguel.....	17	9	26				26
7. Sampaloc.....	100	86	186	9	5	14	200
<b>Total.....</b>	<b>208</b>	<b>179</b>	<b>387</b>	<b>15</b>	<b>11</b>	<b>26</b>	<b>413</b>
<b>No. III, PACO:</b>							
8. Port Area.....							
9. Intramuros.....	18	16	34	1	4	5	39
10. Ermita.....	16	16	32	1		1	33
11. Malate.....	60	48	108	5	3	8	116
12. Paco.....	22	25	47	2		2	49
13. Pandacan.....	14	12	26				26
14. Santa Ana.....	12	12	24	1		1	25
<b>Total.....</b>	<b>142</b>	<b>129</b>	<b>271</b>	<b>10</b>	<b>7</b>	<b>17</b>	<b>288</b>
<b>Grand total.....</b>	<b>563</b>	<b>477</b>	<b>1,040</b>	<b>44</b>	<b>24</b>	<b>68</b>	<b>1,108</b>

Attended by physicians, living, 810; stillbirths, 16.

Attended by midwives, living, 93; stillbirths, 2.

Attended by families, living 705; stillbirths, 80.

NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS  
IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	2		2	7.77
Filipinos.....	293	300	593	24.54
Spaniards.....	4	2	6	37.36
Other Europeans.....				
Chinese.....	20	8	28	19.09
All Others.....	1		1	5.57
<b>Total and average.....</b>	<b>320</b>	<b>310</b>	<b>630</b>	<b>23.94</b>

# **NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MESEIC:</b>			
1. Tondo.....	98	111	209
2. San Nicolas.....	15	23	38
3. Binondo.....	13	13	26
Total.....	126	147	273
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	63	41	104
5. Quiapo.....	9	8	12
6. San Miguel.....	8	7	15
7. Sampaloc.....	39	48	87
Total.....	119	99	218
<b>No. III, PACO:</b>			
8. Port Area.....	1		1
9. Intramuros.....	14	8	22
10. Ermita.....	6	6	12
11. Malate.....	25	28	53
12. Paco.....	17	6	23
13. Pandacan.....	8	7	15
14. Santa Ana.....	4	9	13
Total.....	75	64	139
Grand total.....	320	310	630

# **NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA. TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	112	110
Divorced.....		
Widowed.....	23	67
Single.....	265	179
Conditions not stated.....		1
Total.....	410	357
Grand total.....	757	

Stillbirths.....	48
Number of deaths with medical attendance.....	511
Number of deaths without medical attendance.....	246



## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	104	67	15	6	192
1 year plus.....	33	38	7	4	82
2 years plus.....	19	15	5	1	40
3 years plus.....	10	8	1	2	21
4 years plus.....	2	5	.....	.....	7
5 to 9 years.....	10	6	2	1	19
10 to 14 years.....	5	4	2	3	14
15 to 19 years.....	10	5	5	3	23
20 to 24 years.....	12	17	8	3	40
25 to 29 years.....	12	17	5	3	37
30 to 34 years.....	12	6	6	5	29
35 to 39 years.....	5	15	3	5	28
40 to 44 years.....	7	11	4	1	23
45 to 49 years.....	12	18	4	2	36
50 to 54 years.....	8	10	4	1	23
55 to 59 years.....	14	11	2	.....	27
60 to 64 years.....	6	9	4	1	20
65 to 69 years.....	15	9	.....	2	26
70 to 74 years.....	6	10	3	.....	19
75 to 79 years.....	7	6	.....	1	14
80 to 84 years.....	6	10	.....	2	18
85 to 89 years.....	3	3	.....	.....	6
90 to 94 years.....	1	4	.....	.....	5
95 to 99 years.....	1	5	.....	.....	6
100 years and over.....	.....	1	.....	1	2
Age not stated.....	.....	.....	.....	.....	.....
Total.....	320	310	80	47	757



49	Cancer and other malignant tumors of other or unspecified organs.....	4	4	4	4
52	Chronic rheumatism, osteoarthritis, gout.....	1	3		4
55	Beriberi.....				4
	a. Infants.....	8	4		12
	b. Adults.....	1	2		3
58	Anemia, chlorosis:.....				
	a. Pernicious anemia.....		1		1
70-86	III. Diseases of the nervous system and of the organs of special sense.....				
71	Meningitis:.....				
	a. Simple meningitis.....	5	4	1	10
	b. Nonepidemic cerebro-spinal meningitis.....		1		1
73	Other diseases of the spinal cord.....	1			1
74	Cerebral hemorrhage, apoplexy:.....				
	a. Cerebral hemorrhage.....	5	4	1	10
	b. Cerebral embolism and thrombosis.....		1		1
75	Paralysis without specified cause:.....				
	a. Hemiplegia.....	3	3	1	7
77	Other forms of mental alienation.....	1			1
80	Infantile convulsions (under 5 years of age).....	1			1
86	Diseases of the ear and of the mastoid process:.....				
	a. Diseases of the ear.....	1			1
87-96	IV. Diseases of the circulatory system.....				
88	Endocarditis and myocarditis (acute).....	1	1		2
90	Other diseases of the heart.....	1	6	1	8
97-107	V. Diseases of the respiratory system.....				
99	Bronchitis:.....				
	a. Acute.....	20	16		36
	b. Chronic.....	3	4	1	8
100	Bronchopneumonia:.....				
	a. Bronchopneumonia.....	36	38	4	79
	b. Capillary bronchitis.....	2	2		4
101	Pneumonia:.....				
	a. Lobar.....	9	1	1	11
102	Pleurisy.....	3			3
103	Congestion and hemorrhagic infarct of the lung.....	1			1





# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
	a. Typhoid fever.....			2	3									5
5	Malaria:													2
	a. Malarial fever.....			1								1		1
7	Measles.....			1										1
10	Diphtheria.....			1	1									2
11	Influenza:													2
	b. Without pulmonary complications specified.....									1				1
16	Dysentery:													
	a. Amebic.....			3										3
	b. Bacillary.....			5	1									6
	c. Unspecified or due to other causes.....				1									1
28	Rabies.....			1										1
29	Tetanus:													
	a. Umbilical.....			1										1
	b. Others.....			3										3
31	Tuberculosis of the respiratory system.....			7	1									8
32	Tuberculosis of the meninges and central nervous system.....			1										1
43-69	<i>II. General diseases not included in Class I</i>													
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....			1	1									2
46	Cancer and other malignant tumors of the female genital organs.....				1									1
49	Cancer and other malignant tumors of other or unspecified organs.....		1											2
52	Chronic rheumatism, osteoarthritis, gout.....				1									1
55	Beriberi:													
	a. Infants.....				1									1
60	Diseases of the thyroid gland:													
	a. Exophthalmic goiter.....				1									1



## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
143-150	VIII. The puerperal state													
145	Other accidents of labor:													
146	c. Others under this title.				1									1
146	Puerperal septicemia.				2									2
148	Puerperal albuminuria and convulsions.				1									1
160-163	XII. Early infancy													
160	Congenital debility, icterus, and sclerema.			3										3
164-	XIII. Old age													
164	Senility.			2	2									4
165-203	XIV. External causes													
179	Accidental burns (conflagration excepted).			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
194	c. Automobile accidents.				1									1
198	Excessive heat.	1												1
	Homicide by cutting or piercing instruments			1										1
	Total.	3		72	46					4	1	1		127
	Grand total.	3		118						5		1		127



## INFANT MORTALITY

Causes of death	Under 24 hours	24 hours to under 36 hours	36 hours to under 48 hours	48 hours to under 14 days	14 days to under 1 year	Total
7. Measles.....					2	2
9. Whooping-cough.....					1	1
11. Influenza:						
a. With pulmonary complica- tions specified.....					2	2
16. Dysentery:						
a. Amebic.....					1	1
b. Bacillary.....					2	2
c. Unspecified or due to other causes.....					2	2
24. Meningococcus meningitis.....					1	1
29. Tetanus:						
a. Umbilical.....				7		7
37. Disseminated tuberculosis:						
a. Acute.....					1	1
55. Beriberi.....				4	9	13
71. Meningitis:						
a. Simple meningitis.....					4	4
80. Infantile convulsions.....				1		1
99. Bronchitis:						
a. Acute.....				1	22	23
b. Chronic.....					3	3
100. Bronchopneumonia:						
a. Bronchopneumonia.....					26	26
b. Capillary bronchitis.....					3	3
101. Pneumonia:						
a. Lobar.....					1	1
102. Pleurisy.....					3	3
112. Other diseases of the stomach (cancer excepted).....					1	1
113. Diarrhea and enteritis.....					19	19
126. Peritonitis without specified cause.....					1	1
128. Acute nephritis.....					4	4
131. Other diseases of the kidneys and an- nexa.....					1	1
152. Furuncle.....					2	2
160. Congenital debility, icterus, and scle- rema.....	10	2	1	16	13	42
161. Premature birth; Injury at birth:						
a. Premature birth (not still- born).....	13			1		14
b. Injury at birth (not still- born).....	1					1
162. Other diseases peculiar to early in- fancy.....	8			2		10
179. Accidental burns (conflagration ex- cepted).....					1	1
Total.....	32	2	1	32	125	192

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set.....	21,420
Number of rats caught by spring traps.....	2,675
Number of cage wire traps set.....	660
Number of rats caught by cage wire traps.....	8
Number and kind of baits (coconuts).....	22,740
Number of poison portions placed.....	16,624
Number of rats found poisoned.....	371
Number of rats killed by clubs and other weapons.....	1,000
Number of rats found dead from other causes.....	501
Total number of rats otherwise caught, found dead, or killed.....	4,555
Total number of rats sent to the laboratory for examination.....	4,555
Total number of rats found positive for plague.....	0

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF JUNE, 1927, CITY OF MANILA**

**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. {	2	1	4	2			1	1	2	1	5	3	7	4
No. 1. ....														
No. 2. ....														
No. 3. ....														
No. 4. ....	3		2				3		3		2		5	
No. 5. ....	1		1		1		1		1		1		2	
No. 6. ....			1								1		1	
No. 7. ....	3	1	1				3	1	3	1	1		4	1
No. 8. ....														
No. 9. ....	2		1				2		2		1		3	
No. 10. ....	1						1		1				1	
No. 11. ....	5	1	2				5	1	5	1	2		7	1
No. 12. ....														
No. 13. ....				1								1		1
No. 14. ....			1								1		1	
Grand total. ....	17	3	13	3			1	1	17	3	14	4	31	7

**REMARKS:**

Cases confirmed as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Typhoid carrier—None.

28  
3

20  
5

DISENTERIES REPORTED DURING THE MONTH OF JUNE, 1937, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital						Home				Total				Grand total	
	Male			Female			Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.	No. 1.	3	2												11	6
	No. 2.	2		3			5	4			8	6	3		3	
	No. 3.			1							2		1			
II.	No. 4.	1	1	2	2		2	2	4		3	3	6	6	9	9
	No. 5.															
	No. 6.	1									1				1	
	No. 7.	1					1	1	2	2	2	1	2	2	4	3
	No. 8.															
III.	No. 9.	1									1				1	
	No. 10.	1									1				1	
	No. 11.							1			1	1			1	1
	No. 12.	1					1				2				2	
	No. 13.															
	No. 14.	2									2				2	
	Grand total.	13	3	6	2		10	8	6	6	23	11	12	8	35	19

REMARKS:

Amoebic dysentery.....	5
Bacillary dysentery.....	17
Unspecified.....	13
Cases reported among nonresident persons not included in the table.....	15
Deaths reported among nonresident persons not included in the table.....	10
Dysentery carrier—3	

**CHOLERA REPORTED DURING THE MONTH OF JUNE, 1926, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	No. 1.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 2.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 3.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
II.....	No. 4.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 5.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 6.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 9.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 10.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
III.....	No. 11.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

**REMARKS:**

No nonresident case was reported during the month.

Cholera carrier—18

## DIPHtheria REPORTED DURING THE MONTH OF JUNE, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. { No. 1. No. 2. No. 3.	2	1	1						2	1	1		3	1
II. { No. 4. No. 5. No. 6. No. 7.	1								1				1	
III. { No. 8. No. 9. No. 10. No. 11. No. 12. No. 13. No. 14.	1 2		1 1						1 2		1 1		2 3	
Total.....	6	1	3						6	1	3		9	1

## REMARKS:

Cases reported among nonresident persons not included in the table.....

5

Deaths reported among nonresident persons not included in the table.....

2

Diphtheria carrier—None.

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF JUNE, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	18	3		
Varicella.....	2	1		
Varioloid.....				
Smallpox.....				
Measles.....	2	1		1
Whooping cough.....	1	1	1	1
Influenza.....	31	8	4	1
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....	1		1	
Tuberculosis of the respiratory organs.....	168	175	54	70
Tuberculosis of other organs.....	10	4	6	4
Beriberi, infantile.....	8	4	8	1
Beriberi, adults.....	1	2	1	2

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	19	4	2	
Varicella.....	11	1		
Varioloid.....				
Smallpox.....				
Measles.....	6	1	1	
Whooping cough.....				
Influenza.....	5	2	1	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	24	11	7	1
Tuberculosis of other organs.....	1		1	
Beriberi, infantile.....		1		1
Beriberi, adults.....				

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF JUNE, 1927**

Sera and vaccines	On hand June 1, 1927	Received during the month	Total to be accounted for	Distribut- ed during the month	Remaining at the end of the month
Anti-diphtheric serum (units).....	870,000	.....	870,000	400,000	470,000
Anti-dysenteric serum (ampoules).....	161	800	961	929	32
Anti-tetanic serum (units).....	700,000	573,000	1,273,000	473,000	800,000
Cholera vaccine (c.c.).....	63,800	30,000	93,800	70,640	22,660
Dried vaccine virus (units).....	117,900	100,000	217,900	99,300	118,600
Dysenteric vaccine (c. c.).....		5,690	5,690	4,940	750
Fresh vaccine virus (units).....	265,300	200,000	465,300	171,400	293,900
Gonococcus vaccine (ampoules).....		160	160	160	
Mixed typhoid-cholera vaccine (c.c.).....	72,380	150,000	222,380	147,300	75,080
Normal horse serum (ampoules).....		50	50	50	
Strer tococcus vaccine (ampoules).....					
Typhoid vaccine (c.c.).....	6,000	18,000	24,000	18,600	5,400

# REPORT OF ANTI-SMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF JUNE, 1927

339

Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated					
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over	
			Never	Successfully	Unsuccessful	Positive	Negative	Positive	Negative	Total
No. 1	Tondo	256	192	.....	64	234	57	10	2	244
	San Nicolas	140	105	.....	35	67	37	2	.....	69
	Binondo	3,437	99	3,329	9	17	8	1	.....	18
	Santa Cruz	937	121	738	78	140	30	29	16	73
No. 2	Quiapo	33	26	.....	7	31	6	2	.....	33
	San Miguel	32	19	.....	13	22	6	6	.....	28
	Sampaloc	300	211	26	63	131	39	8	2	139
	Port Area	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 3	Intramuros	836	119	681	36	34	26	2	.....	36
	Ermita	141	94	.....	47	74	44	2	.....	76
	Malate	93	68	.....	35	66	32	3	.....	69
	Paco	854	169	502	183	67	34	9	7	76
	Pandacan	38	25	.....	13	35	16	.....	.....	35
	Santa Ana	10	9	.....	1	17	1	.....	.....	17
	Total	7,107	1,247	5,276	584	935	336	74	27	1,385
										436

Vaccine virus:  
 Received ..... 18,200 units  
 Used ..... 7,500 units  
 Remained ..... 10,700 units

## ANTI-DYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF JUNE, 1927

Health districts	Municipal districts	Number of injections made in—						Total number of injections	
		Adults		Children					
		First injections	Second injections	First injections	Second injections	First	Second		
No. 1.	Tondo.....	34	30	9	9	43	39		
	San Nicolas.....	4	9		4	4	13		
	Binondo.....								
No. 2.	Santa Cruz.....	36	25	22	27	58	52		
	Quiapo.....	2				2			
	San Miguel.....	1		4		5			
	Sampaloc.....	9	2	2	2	11	4		
No. 3.	Port Area.....								
	Intramuros.....								
	Ermita.....	12	6	4		16	6		
	Malate.....	15	18	10	7	25	25		
	Paco.....	8	5	15	11	23	16		
	Pandacan.....								
	Santa Ana.....								
	Total.....	121	95	66	60	187	155		



Health districts	Municipal districts	Number of injections made in—										Total number of injections							
		Adults						Children				Total number of injections							
		First injections		Second injections		Third injections		First injections		Second injections		Third injections		First		Second		Third	
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1.	Tondo.	3,247		1,802		1,485		33	1,837	21	1,055	10	1,049	33	5,084	21	2,857	10	2,534
	San Nicolas.	806		194		437		4	128		85		43	4	934		279		480
	Binondo.	1,794		374		278	1	2	207	2	118		53	3	2,001	2	492	1	331
No. 2.	Santa Cruz.	1,386		459		327			326		63		41		1,712		522		368
	Quapo.	747		595		687		4	159	3	135	8	135	4	906	3	730	8	822
	San Miguel.	652		399		396			321		197		222		973		596		618
	Sampaloc.	1,635		940		558		41	805	34	523	15	325	41	2,440	34	1,463	15	883
No. 3.	Port Area.																		
	Intramuros.	203		945		846			1,027		1,047		866		1,230		1,992		1,712
	Ermita.	1,122		696		555		4	851	2	598	3	94	4	1,973	2	1,294	3	649
	Malate.	516		350		227		6	199		136		88	6	715		486		315
	Paco.	859		647		296			2,178		1,799		112		3,037		2,346		408
	Pandacan.	499		223		198			499		946		140		998		1,169		338
	Santa Ana.	125		107		77			1,892		1,143		1,046		2,017		1,250		1,123
	Total.	1	13,591		7,631	1	6,367	94	10,429	62	7,845	36	4,214	95	24,020	62	15,476	37	10,581

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.  
Pure typhoid vaccine used for the third injections.

V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED REPORT OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	6,863	1,460	1,827	3,576
Agusan.....	3,169	849	759	1,561
Albay.....	35,551	7,098	6,444	22,009
Antique.....	8,368	2,190	3,838	2,340
Bataan.....	8,345	3,172	2,606	2,567
Batanes.....	1,666	145	366	1,155
Batangas.....	32,992	10,242	6,797	15,953
Bohol.....	7,635	2,432	2,238	2,965
Bukidnon.....	2,610	956	465	1,189
Bulacan.....	13,629	4,978	4,252	4,399
Cagayan.....	35,302	7,631	20,345	7,326
Camarines Norte.....	10,520	1,808	5,226	3,486
Camarines Sur.....	17,255	4,111	5,856	7,288
Capiz.....	25,268	5,925	11,418	7,925
Catanduanes.....	11,640	2,705	1,617	7,318
Cavite.....	16,368	3,329	7,220	5,819
Cebu.....	53,621	18,585	7,605	27,431
Cotabato.....	14,289	4,305	4,411	5,573
Davao.....	24,523	10,192	8,000	6,331
Ilocos Norte.....	15,800	3,466	4,597	7,737
Ilocos Sur.....	12,972	3,903	1,304	7,765
Iloilo.....	69,559	16,957	42,560	10,042
Isabela.....	26,879	6,884	14,124	5,871
Laguna.....	27,030	4,903	15,692	6,435
Lanao.....	56,368	10,919	40,786	4,663
La Union.....	13,956	2,868	237	10,851
Leyte.....	10,425	3,053	1,869	5,503
Marinduque.....	59,712	4,125	41,527	14,060
Masbate.....	4,971	1,585	1,187	2,199
Mindoro.....	2,696	678	502	1,516
Misamis.....	13,151	4,527	1,467	7,157
Mountain Province.....	26,421	6,862	15,237	4,322
Nueva Ecija.....	14,287	6,101	2,597	5,589
Nueva Vizcaya.....	2,211	800	296	1,115
Occidental Negros.....	57,185	20,992	23,911	12,282
Oriental Negros.....	18,611	6,129	5,392	7,090
Palawan.....	24,332	5,780	9,978	8,574
Pampanga.....	29,421	10,861	4,074	14,486
Pangasinan.....	60,193	9,709	47,864	2,620
Rizal.....	34,617	5,931	20,872	7,814
Romblon.....	40,435	7,631	13,627	19,277
Samar.....	10,088	4,527	306	5,255
Sorsogon.....	3,606	2,002	415	1,189
Sulu.....	3,514	1,720	371	1,423
Surigao.....	10,181	2,567	5,462	2,152
Tarlac.....	19,888	8,543	3,630	7,715
Tayabas.....	6,308	2,433	1,243	2,632
Zambales.....	6,630	1,908	1,074	3,648
Zamboanga.....				
Total.....	1,011,061	260,477	423,391	327,193

**NOTE:**<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927—Continued**

Provinces	Inspections of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	553	316	1,239	1,100	1,149	1,839	2,941	3,255
Agusan.....	150	161	174	116	488	201	812	478
Albay.....	3,172	874	5,138	1,156	7,916	3,251	16,226	5,281
Antique.....	868	256	994	693	649	1,006	2,511	1,955
Bataan.....	1,666	338	2,240	899	1,674	673	5,580	1,910
Batanes.....	166	80	221	124	370	250	757	454
Batangas.....	4,906	1,296	7,142	2,845	6,498	5,325	18,546	9,466
Bohol.....	1,084	293	1,574	608	1,754	1,432	4,412	2,333
Bukidnon.....	74	80	207	246	476	896	757	1,222
Bulacan.....	4,251	834	2,876	1,335	2,482	1,662	9,609	3,831
Cagayan.....	2,814	470	4,690	961	8,414	7,039	15,918	8,470
Camarines Norte.....	997	194	1,619	357	3,304	1,495	5,920	2,046
Camarines Sur.....	2,420	816	2,444	858	5,552	2,976	10,416	4,650
Capiz.....	1,991	422	3,094	1,157	8,813	3,380	13,898	4,959
Catanduanes.....	795	432	902	490	953	649	2,650	1,671
Cavite.....	2,893	535	2,654	902	5,646	3,692	11,193	5,129
Cebu.....	5,341	1,543	6,571	1,946	5,908	5,124	17,820	8,613
Cotabato.....	359	283	978	937	2,953	2,569	4,290	3,789
Davao.....	664	241	2,060	805	9,378	4,032	12,102	5,078
Ilocos Norte.....	2,033	726	3,087	1,179	3,075	3,423	8,195	5,328
Ilocos Sur.....	1,850	531	2,365	966	2,092	2,210	6,307	5,707
Iloilo.....	4,406	637	9,022	2,782	18,970	18,541	32,398	21,960
Isabela.....	1,501	657	3,506	969	8,027	6,264	13,034	7,890
Laguna.....	2,330	484	3,028	1,499	6,135	7,415	11,493	9,398
Lanao.....	1,691	277	4,394	1,804	14,410	16,595	20,495	18,676
La Union.....	1,814	467	2,177	1,608	1,673	2,719	5,664	4,794
Leyte.....	400	165	1,200	450	2,353	1,069	3,953	1,684
Marinduque.....	1,006	270	3,822	1,253	21,690	10,223	26,518	11,746
Masbate.....	470	184	714	301	1,392	790	2,576	1,275
Mindoro.....	398	163	307	147	659	438	1,364	748
Misamis.....	61	302	1,226	572	1,921	1,204	3,908	2,078
Mountain Province.....	887	192	2,869	711	9,677	6,390	13,433	7,293
Nueva Ecija.....	2,563	700	3,506	1,416	2,104	1,894	8,173	4,010
Nueva Vizcaya.....	374	178	249	259	362	650	985	1,087
Occidental Negros.....	4,397	809	7,061	1,918	11,510	9,636	22,968	12,363
Oriental Negros.....	2,613	800	2,827	1,317	4,748	2,357	10,188	4,474
Palawan.....	1,906	391	1,659	544	3,766	3,742	7,331	4,677
Pampanga.....	5,084	1,257	6,131	2,207	4,970	4,344	16,185	7,808
Pangasinan.....	3,275	785	5,139	2,208	12,349	19,106	20,763	22,099
Rizal.....	973	134	3,778	1,162	12,328	9,671	17,079	10,967
Romblon.....	1,846	783	3,640	2,414	6,097	5,042	11,583	8,239
Samar.....	1,063	428	2,029	956	2,436	1,433	5,528	2,817
Sorsogon.....	452	229	851	417	1,923	1,082	3,226	1,728
Sulu.....	499	181	708	264	827	421	2,034	866
Surigao.....	1,249	395	1,931	1,068	1,950	2,618	5,130	4,081
Tarlac.....	3,255	527	4,788	1,030	6,385	2,758	14,423	4,315
Tayabas.....	1,061	215	1,113	492	914	1,133	3,088	1,840
Zambales.....	364	509	593	1,070	794	1,716	1,751	3,295
Zamboanga.....								
<b>Total.....</b>	<b>85,685</b>	<b>22,840</b>	<b>130,532</b>	<b>50,518</b>	<b>239,914</b>	<b>192,375</b>	<b>456,131</b>	<b>265,733</b>

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	16,579	6,274	.....	22,853
Antique.....	10,704	6,150	.....	16,854
Bataan.....	1,667	.....	.....	1,667
Batangas.....	12,365	40	.....	12,405
Bulacan.....	70,248	78	.....	70,326
Camarines Norte.....	1,841	10	.....	1,851
Camarines Sur.....	13,583	126	.....	13,709
Capi.....	11,693	2,998	.....	14,691
Catanduanes.....	102	.....	.....	102
Cavite.....	336	.....	.....	336
Cebu.....	57	.....	.....	57
Ilocos Norte.....	5,969	2,469	.....	8,438
Iloilo.....	18,754	3,771	.....	22,525
Isabela.....	77	.....	.....	77
Laguna.....	3,044	460	.....	3,504
Leyte.....	4,323	1,547	.....	5,870
Marinduque.....	502	280	.....	782
Nueva Ecija.....	123	33	.....	156
Pampanga.....	43,403	5,703	.....	49,106
Pangasinan.....	6,480	3,072	.....	9,552
Rizal.....	16,123	1,231	.....	17,354
Romblon.....	1,071	40	.....	1,111
Samar.....	73	73	.....	146
Sorsogon.....	2,260	278	.....	2,538
Tarlac.....	5,065	831	.....	5,896
Total.....	246,442	35,464	.....	281,906

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	273	232	77	582
Batangas.....	2,280	1,176	122	3,578
Bulacan.....	1,304	722	450	2,476
Camarines Sur.....	97	19	.....	116
Catanduanes.....	7	6	.....	13
Iloilo.....	1,979	933	357	3,269
Laguna.....	2,850	1,505	846	5,201
La Union.....	267	242	244	753
Nueva Ecija.....	587	369	139	1,095
Pampanga.....	1,327	1,543	803	3,673
Pangasinan.....	1,670	1,403	1,009	4,082
Rizal.....	1,526	486	56	2,068
Samar.....	2	.....	.....	2
Sorsogon.....	115	.....	.....	115
Tarlac.....	665	270	20	955
Total.....	14,949	8,906	4,123	27,978

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan	7,508	1,924		9,427
Bataan	1,045	708		1,753
Batangas	3,610	2,140		5,750
Buhol	2,634	1,921		4,555
Bulacan	1,266	537		1,808
Cagayan	3,054	1,217		4,271
Camaringes Norte	220	119		339
Camaringes Sur	844	312		1,156
Cavite	25,814	23,861		49,175
Cebu	12,952	1,757		14,709
Cotabato	495			495
Davao	1,925	1,197		3,122
Ilocos Norte	2,096	1,126		3,222
Ilocos Sur	2,125	1,589		3,714
Iloilo	5,104	3,146		8,250
Isabela	63	56		119
Laguna	84	79		163
Lanao	3,539	1,227		4,766
La Union	4,062	2,552		6,614
Leyte	4,988	670		5,658
Marinduque	74			74
Masbate	1,225	363		1,588
Misamis	5,541	675		6,216
Nueva Ecija	7,205	2,407		9,612
Nueva Vizcaya	1,646	1,246		2,892
Occidental Negros	51,504	28,671		80,175
Oriental Negros	1,994	1,321		3,315
Pampanga	20,330	15,221		35,551
Pangasinan	1,238	744		1,982
Rizal	27,672	14,226		41,898
Samar	2,476	1,171	173	3,820
Surigao	451	337		788
Tarlac	4,507	992		5,499
Tayabas	9,806	4,838		14,644
Zambales	4,368	4,013		8,381
Zamboanga	5,690	1,103		6,193
<b>Total</b>	<b>228,050</b>	<b>123,466</b>	<b>173</b>	<b>351,689</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF JUNE, 1927**

(No case and no death reported during the month.)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF JUNE, 1927**

Provinces and towns	Cases	Deaths
LEYTE:		
Abuyug	1	0
Carigara	1	1
<b>Total</b>	<b>2</b>	<b>1</b>

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF JUNE, 1927**

Sanitary orders	Health districts			Total
	No. 1 Meisic	No. 2 Sampaloc	No. 3 Paco	
<b>Orders pending, June 1, 1927:</b>				
Minor .....	126	147	54	327
Sewer .....	25	48	1	74
Vacating .....	8	11		19
Filling .....	9	35	16	60
<b>Total .....</b>	<b>168</b>	<b>241</b>	<b>71</b>	<b>480</b>
<b>Orders issued during the month:</b>				
Minor .....	9	6	6	21
Sewer .....	1	1		2
Vacating .....				
Filling .....			2	2
<b>Total .....</b>	<b>10</b>	<b>7</b>	<b>8</b>	<b>25</b>
<b>Orders completed during the month:</b>				
Minor .....	7	7	3	17
Sewer .....				
Vacating .....				
Filling .....				
<b>Total .....</b>	<b>7</b>	<b>7</b>	<b>3</b>	<b>17</b>
<b>Orders cancelled during the month:</b>				
Minor .....	1			1
Sewer .....				
Vacating .....				
Filling .....				
<b>Total .....</b>	<b>1</b>			<b>1</b>
<b>Orders pending, June 30, 1927:</b>				
Minor .....	127	146	57	330
Sewer .....	26	49	1	76
Vacating .....	8	11		19
Filling .....	9	35	18	62
<b>Total .....</b>	<b>170</b>	<b>241</b>	<b>76</b>	<b>487</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations .....	20	45	40	105
<b>Permits for minor building constructions:</b>				
Approved .....	37	43	20	100
Disapproved .....	4	7	2	13
<b>New buildings completed .....</b>	<b>11</b>	<b>23</b>	<b>20</b>	<b>54</b>
<b>Permits for light and mixed material constructions:</b>				
Approved .....	7	28	22	57
Disapproved .....	2	2	3	7
<b>Prosecutions:</b>				
Convictions .....				
Dismissals .....	4		3	7
Amount of fines .....				
<b>Plumbing permits issued .....</b>	<b>39</b>	<b>64</b>	<b>40</b>	<b>143</b>
<b>Plumbing projects completed .....</b>	<b>24</b>	<b>48</b>	<b>28</b>	<b>100</b>
<b>Premises connected to the sanitary sewer to May 31, 1927 .....</b>	<b>2,510</b>	<b>4,299</b>	<b>706</b>	<b>7,515</b>
<b>Connected during the month .....</b>	<b>4</b>	<b>8</b>	<b>6</b>	<b>18</b>
<b>Total .....</b>	<b>2,514</b>	<b>4,307</b>	<b>712</b>	<b>7,533</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.







THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

JULY, 1927

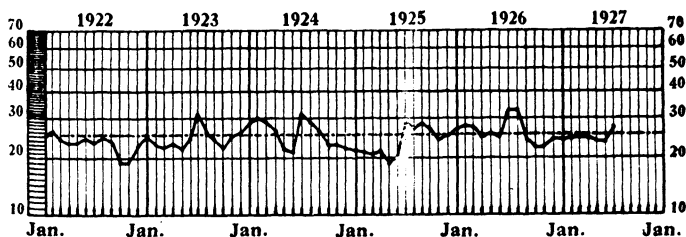
No. 7

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1927

## PHILIPPINE HEALTH SERVICE

### COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
LEONCIO LOPEZ-RIZAL, M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

### TABLE OF CONTENTS

	Page
A Report about an Unidentified Microörganism Isolated from Cases of Acute Vegetative Endocarditis among Lepers in Culion, by Dr. FILIBERTO SOLIS .....	349
A Comparative Value of the Khan and Wasserman Tests, by Dr. M. V. ARGÜELLES .....	351
Hints on Beriberi Prevention.....	354
Classification of Pulmonary Tuberculosis.....	356
Hospitals and Dispensaries as Means to Stabilize Health Funds.....	358
Miscellaneous .....	361
General Statistics .....	367

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VII**

**JULY, 1927**

**No. 7**

**A REPORT ABOUT AN UNIDENTIFIED MICROORGANISM  
ISOLATED FROM CASES OF ACTIVE VEGETATIVE  
ENDOCARDITIS AMONG LEPERS IN CULION <sup>1</sup>**

**(With Brief Mention of Clinical Aspects)**

**By FILIBERTO SOLIS, M.D.**

*Former Assistant Pathologist, Culion Leper Colony  
Bacteriologist, Zamboanga Central Laboratory  
Philippine Health Service*

**[Abstract]**

An unidentified microorganism was isolated from twelve of the 27 cases of acute bacterial endocarditis within a period of three and a half years at Culion Leper Colony. Clinically the disease is characterized by chills, septic fever, icterus, and, in the later stages, by embolic phenomena. In the first week the condition may be mistaken for malaria but the latter can easily be ruled out by the absence of the parasites in the blood and by the presence of marked hyperleucocytosis. The disease has invariably proved fatal in two to four weeks.

The organism can easily be cultured from the patient and, at autopsy from the vegetations on the affected valves of the heart.

Morphologically, it is short plump bacillus (2 x 0.8 micron) with a uniform body and rounded ends. It may appear singly, or in twos, or in short chains or long threads. It is non-motile,

<sup>1</sup>Read in the Annual Meeting of the Philippine Islands Medical Association, Manila, December 10, 1926, with the permission of the Director of Health.

Gram negative, and non-spore bearing. It grows best on media containing blood or hemoglobin, and apparently is related to the family of "hemophilæ," differing from the only three groups recongnized by the Committee of the Society of American Bacteriologists, in that it especially affects the valves of the heart, and not the respiratory system, conjunctivæ, or genital organs. Definite antibodies (agglutinins) in the serum of the patients have been demonstrated.

In every case where the organism had been isolated from the blood, an acute vegetative endocarditis was found, either at the mitral alone, or at both aortic and mitral, or, more rarely, at the tricuspid.

In the autopsy of the cases the total of entry has never been demonstrated.

Experimental inoculations to monkeys, rabbits and guinea pigs have failed to reproduce the disease even with massive doses.

Whether or not this unidentified organism which has been frequently found in a great majority of the fatal cases of endocarditis among the lepers in Culion is a new pathogen remains to be further studied.

# COMPARATIVE VALUE OF THE KAHN AND WASSERMANN TESTS

By Dr. M. V. ARGÜELLES

*Medical Inspector, P. H. S.*

*Bacteriologist, San Lazaro Hospital*

Recent work is confirming more and more convincingly the value of the precipitation test of Kahn as a diagnostic procedure for treponematous infections. The following tables have been compiled to demonstrate this.

TABLE 1.—*Comparison of results of Kahn and complement fixation according to various authors*

[Compiled by M. V. Argüelles]

Author	Number of specimen	Compared with—	Per cent agree	Per cent disagree	Remarks
<b>SYPHILIS</b>					
Young.....(1) ..	5,080	Wassermann..	99.0	1.0	
Michigan State Laboratory.....(2) ..	156,000	do.....	99.5	0.5	Kahn slightly more sensitive than Wass.
Keim and Wile.....(3) ..	350	do.....			Compares favorably in sensitiveness.
Keim.....(4) ..	1,000	do.....			Compares favorably.
Keim and Kahn.....(5) ..	3,600	do.....			Do.
Young.....(6) ..	8,070	do.....	98.0		Do.
Schueren.....(7) ..	2,024	do.....	95.13		
Pineda and Wade.....(8) ..	575	do.....	89.43		Kahn more sensitive than Wassermann.
Fox and Sanderson.....(9) ..	1,000	do.....	89.6		
Dettweiler.....(10) ..	2,126	do.....	94.8		
Ide and Smith.....(11) ..	2,165	do.....	98.0		
Roas.....(12) ..	1,403	do.....	91.0		
Pancotto.....(13) ..	500	do.....	98.32		
Argüelles.....(14) ..	100	do.....	93.0		
Owen and Cope.....(15) ..	500	do.....	50.5		
Strumia.....(16) ..		Kolmer.....	90.0		
Rubenstein and Gauran.....(17) ..	639	do.....	90.0		
Argüelles.....(18) ..	410	do.....	96.0		(Annual Report P. H. S. not in press.)
Holmes.....(19) ..	1,000	do.....	90.4		
Havens and Taylor.....(20) ..	1,395	do.....	92.7		
Rockstraw and Bent.....(21) ..	1,022	do.....	96.2		
Sheppe.....(22) ..	2,000	do.....	98.0		
Dulaney.....(23) ..	900	do.....	87.8		
Levin.....(24) ..	2,542	do.....	94.6		
Redfield.....(25) ..	2,000	do.....			Kahn more sensitive.
Willet.....(26) ..	1,400	do.....	95.0		
Perham and Behrens.....(27) ..		Noguchi.....	96.8		
<b>YAWS</b>					
Pineda and Wade.....(28) ..	56	Wassermann..	94.0		
<b>LEPROSY</b>					
Yagle and Kolmer.....(29) ..	28	Kolmer.....			Kahn negative in non-syphilitic leper sera.
Pineda and Pineda-Roxas.....(30) ..	250	do.....			Kahn negative in uncomplicated leprosy.
Argüelles.....(14) ..	81	Wassermann..			6.17 per cent of non-treponematous lepers are positive for Kahn.
<b>OTHER NON-SYPHILITIC CONDITIONS</b>					
Keim and Kahn.....(31) ..	2,500	do.....			All negative for Kahn except for seven cases. (See Table 2).

**TABLE 2.**—*Classification of non-treponematous cases giving positive reactions*

Number of cases	Khan reaction	Wasserman reaction cholesterinized antigen		Diagnosis
		Eight hours of fixation in icebox	One hour of fixation in icebox	
1.....	+++	—	++	Pompolix.
1.....	++	—	++	Ache rosacea.
1.....	+	—	±	Alopecia Areata.
1.....	+	±	±	Acnevulgaris.
1.....	+	—	—	Do.
1.....	+	±	—	Pityriasis rocea.
1.....	++	++	—	Dermatomycosis.
1.....	—	±	—	Pneumonia.
1.....	—	++++	—	Deviated nasal septum.
1.....	—	++++	—	Tonsilitis.

In 2,500 tests on non-syphilitic sera, all were found negative in both the Wassermann and Kahn tests except in 7 cases which were positive for Kahn and 9 positive for Wassermann. The diagnosis of the above tests may be seen in Table 2. During 1926, we examined 410 specimens by the Kahn test at San Lazaro Hospital and by the Wassermann test as performed in the Bureau of Science. There were 328 Wassermann negatives, 2 anticomplimentary, and 80 Wassermann postitives. There were 324 Kahn negatives and 86 positives. A reading of — to + was considered negative and from 2+ to 4+ as positives. There was an agreement in the negatives of 98.78%. The diagnosis by the Clinicians of the 6 Kahn positives which were Wassermann negatives were:

**TABLE 3**

	Wassermann	Names	Kahn	Diagnosis
1.....	+	M. C.....	4+	Gonorrheal cervicitis, Secondary syphilis.
2.....	+	S. N.....	3+	Secondary syphilis.
3.....	—	R. V.....	2+	Primary syphilis.
4.....	+	M. R.....	3+	Secondary syphilis, active pulmonary tuberculosis.
5.....	—	M. V.....	2+	Syphilis.
6.....	—	H. C.....	2+	Psychopathic personality.

The final diagnosis by the Clinicians of the 4 Khan negatives which were positive for Wassermann were:

**TABLE 4**

	Wassermann	Names	Kahn	Diagnosis
1.....	2+	L. C.....	—	Chancroid.
2.....	2+	A. L.....	—	No syphilitic lesion.
3.....	3+	C. T.....	—	Manic depressive psychosis.
4.....	3+	P. M.....	—	Do.

## REFERENCES

1. YOUNG. J. A. M. A., 79, 1674, November 4, 1922.
2. MICHIGAN STATE LABORATORY. Michigan Department of Health.
3. KEIM AND WHILE. University of Michigan Medical School.
4. KEIM. A. M. Jour. Syph., VIII, 323, 1924.
5. KEIM AND KHAN. Derm. and Syph., X, 722, 1924.
6. YOUNG. Am. Jour. Public Health, XIII: 96, February, 1923.
7. SCHUEREN. Detroit City Health Department Laboratory.
8. PINEDA AND WADE. Jour. Phil., Med. Ass., Vol VI, June, 1926, No. 6.
9. FOX AND SANDERSON. Am. Jour. Suph. VII. 687, 1923.
10. DETTWEILER. Jour. A. M. A. LXXXI 815, 1925.
11. IDE and SMITH. Univ. of Michigan Hospital.
12. BOAS. Derm. Zeitschrift, XLIII, 1924, Denmark.
13. PANCOTTO. Giornale de Clinica Medica, Fasc. 1, 1925.
14. ARGÜELLES. Phil. Jour. Science, Vol. 30 No. 3, July, 1926.
15. OWEN and COPE. Jour. Mich. State Med. Soc., February, 1925.
16. STRUMIA. Arch, Derm. & Suph., 8 (1923) 50.
17. AUBENSTEIN and GUARAN. Bulletin and de la Societe Francaise Dermatologic et de Syphiligraphie.
18. ARGÜELLES. Annual Report P. H. S., not in press.
19. HOLMES. Washington University, St Louis Mo., J. A. M. A. LXXXI, 294, 1923.
20. HAVENS and TAYLOR. Am. Jour. Public Health, April, 1923.
21. KOCKSTRAW and BENT. Jour. Lab. & Clin. Med., IX, 634, 1924.
22. SHEPPE. West Virginia Medical Jour., December, 1924.
23. DULANEY. Am. Jour. Public, XIII, 472, 1923.
24. LEVIN. Northwest Medicine, December, 1924.
25. REDFIELD. Va., Am. Hour. Syph IX, April, 1925.
26. WILLER. Jour. Missouri Med. Assn., May, 1925.
27. PERHAM and BEHRENS. U. S. Med. Bull., XXII, 23, 1925.
28. PINEDA and WADE. Jour. of P. I. Med. Assn., Vol. VI, June, 1926.
29. YAGLE and KOLMER. Arch. Dern & Syph., 8, 1923, 183785.
30. PINEDA and PINEDA-ROXAS. Phil. Jour. Sc. 30 No. 3, July, 1926.
31. KEIM and KAHN. J. Lab. Med., X, 1013, September, 1925.

## HINTS ON BERIBERI PREVENTION

Beriberi Causes many deaths in the Philippines. Many infants die of Beriberi. "taon" and "suba" are common names for Beriberi in infants.

What causes Beriberi?

What prevents Beriberi?

Beriberi develops when our food is wrong. Beriberi is prevented when our food is right.

Our bodies are like houses.

Our food is the building material. As we grow and work our bodies use up the materials of which they are built.

As house get older they need to be repaired. Should a floor be made of cogon grass instead of bamboo everybody would think such a thing ridiculous. The repairing materials must be the right kind otherwise the repair work may be useless.

Our bodies are likewise made of materials of several different kinds.

To keep our bodies in good repair—to keep them healthy—we must give them the proper kinds of repairing materials.

The repairing materials for our bodies are furnished through the foods we eat.

Unless our bodies get all the different kinds of food they need we are likely to get sick.

One such sickness is Beriberi.

Beriberi develops when we do not eat enough food of the right kinds. Beriberi is prevented when we eat enough food of the right kinds.

The kinds of repair and supporting materials needed by our bodies are called proteins, carbohydrates, fats, water, salts, and vitamins.

These are all necessary and people naturally eat enough of each one except the vitamins.

It is lack of vitamin that causes beriberi. Beriberi develops when we do not eat food containing enough vitamin. Beriberi is prevented if we eat food containing enough vitamins.

Rice is a good food when it is prepared in the old way. When rice is polished in a mill, by a machine, it does not contain enough vitamin.



The vitamine is in the tiki-tiki and the machine take this away.

When the food consists of only machine-polished rice and fish, the body does not get enough vitamine and beriberi is likely to develop.

When machine-polished rice is eaten other food which contain vitamine must be eaten with it if beriberi is to be avoided. Beriberi develops when we eat only machine-polished rice and fish.

Beriberi is prevented if we eat also other foods which contain vitamins.

Other foods which contain vitamin are maize, green vegetables, and fruits.

People who eat machine-polished rice need to eat also plenty of beans, chicharo, habichuelas, sitao, patani, batao, paayap, mongo, balatong, peanuts, etc., and fresh fruits so their babies will be healthy.

Mothers nursing their babies must eat plenty of beans, chicharo, habichuelas, patani, batao, paayap, mongo, balatong, peanuts, etc., and fruits so their babies will not get beriberi.

People who eat maize with their rice do not get beriberi.

Maize, beans, sitao, patani, batao, paayap, mongo, balatong, peanuts, etc., and fresh fruits contain the vitamin which the body needs.

Beriberi develops if other vitamin containing food is not eaten with machine polished rice.

Beriberi is prevented if those who eat machine polished rice also eat maize, chicharo, habichuelas, sitao, patani, batao, paayap, balatong, peanuts. etc.

## CLASSIFICATION OF PULMONARY TUBERCULOSIS

The following is the classification adopted by the American Sanatorium Association and by the National Tuberculosis Association.

### SCHEME FOR THE CLASSIFICATION OF PATIENTS ON EXAMINATION LESION

*Minimal (incipient).* Slight lesion limited to a small part of one or both lungs. No serious tuberculosis complications.

*Moderately advanced.* A lesion of one or both lungs, more widely distributed than under minimal, the extent of which may vary, according to the severity of the disease, from the equivalent of one-third the volume of one lung to the equivalent of the volume of an entire lung with little or no evidence of cavity formation.

No serious tuberculous complications.

*Far advanced.* A lesion more extensive than under *moderately advanced* or definite evidence of marked cavity formation. Or serious tuberculous complications.

### SYMPTOMS

A. *Slight or No.* Slight or no constitutional symptoms including particularly gastric or intestinal disturbance or rapid loss of weight; slight or no elevation of temperature or acceleration of pulse at any time during the 24 hours. Expectoration usually small in amount or absent. Tubercle bacilli may be present or absent.

B. *Moderate.* No marked impairment of function, either local or constitutional.

**C. Severe.** Marked impairment of function, local or constitutional.

This classification provides for the following groups and sub-groups:

Minimal A	Moderately advanced A	Far advanced A
Minimal B	Moderately advanced B	Far advanced B
Minimal C	Moderately advanced C	Far advanced C

#### SCHEMA FOR THE CLASSIFICATION OF SUBSEQUENT OBSERVATIONS

*Apparently cured.* All constitutional symptoms and expectoration with bacilli absent for a period of two years under ordinary conditions of life.

*Arrested.* All constitutional symptoms and expectoration with bacilli absent for a period of six months; the physical signs to be those of a healed lesion; Roentgen findings to be compatible with the physical signs.

*Apparently arrested.* All constitutional symptoms and expectoration with bacilli absent for a period of three months; the physical signs to be those of a healed lesion; Roentgen findings to be compatible with the physical signs.

*Quiescent.* Absence of all constitutional symptoms; expectoration and bacilli may or may not be present; physical signs and Roentgen findings to be those of a stationary or retrogressive lesion; the foregoing conditions to have existed for at least two months.

*Improved.* Constitutional symptoms lessened or entirely absent; cough and expectoration with bacilli usually present; physical signs and Roentgen findings to be those of a stationary or retrogressive lesion.

*Unimproved.* Essential symptoms unabated or increased; physical signs and Roentgen findings to be those of an active or progressive lesion.

*Died.*

## HOSPITALS AND DISPENSARIES AS MEANS TO STABILIZE HEALTH FUNDS

By F. GONZALES SIOCO

*Senior Medical Inspector, D. H. O., Pampanga*

It is an undeniable fact that so far, the common mass of people, and even a good number of the intelligent class, have not as yet come to completely understand the great importance of a Health Service. In other words, the Public Health Service is yet wanting the popularity it deserves, and consequently it fails to obtain the full support of the people. And it is no wonder, when in countries which are called leaders of civilization, as France, Germany, and large portions of the United States, etc. many of the common classes have not as yet come to understand the real importance of Sanitation and the benefits derived therefrom.

The reason for this is, because Sanitation is still a young science and has been up to now comprehended as a less important branch of Medicine, or merely a luxury of the rich. And as such, the common mass of the people of the Philippines have regarded Sanitation as their enemy.

And taking into consideration that during the Spanish régime there were no health officers but "médicos titulares" whose main duty was to act as "coroners" or "medico-legists" and free doctors, the people had since been lead to understand the duties of the health officers more as free doctors and medico-legists than as sanitarians, and they remain with that belief to the present time.

And if given consideration further of the fact that most sanitary measures proposed or dictated are almost always an innovation, in the majority of the cases, an impopular one, hence the less popular consideration of the Public Health Service among the people is easily understood; especially if its doctors charge medical fees to some public officials who have some intervention in the disposal of public funds.

A disgusted official is more often than not a sure check to the increase, if not the stability, of the municipal or provincial per

centum for health funds. And this instability is an every-year occurrence in our provinces.

To obviate this instability the undersigned has for many years studied the problem, and has come to the conclusion that, inasmuch as the people have for centuries been lead to learn that the curative side of sanitation is of a more paramount importance than Sanitation itself, it is not an easy work to turn the people away from this belief, at least for a generation or two. On the other hand, seeing that the people's heart—read “favors”—may be enlisted better through hospitals, dispensaries and nurses, that is, the curative side of Sanitation; to enable us to reach those “favors” on behalf of ultimately perfect sanitation. Hence, the writer proposes that as a propulsion towards the embetterment of Sanitation be made towards that of the establishment of hospitals and dispensaries, and the increase of the number of nurses in the provinces, all to be worked out under the Philippine Health Service and only under one fund; and not as is done at present, when there is a per centum contributed for hospitals only, and another for health funds that can be used for hospitals as well.

As the laws stand at present, a defect is observed.

Act 3168 provides that municipalities contribute 3 per cent for hospitals, while there are former laws where it is designed that municipalities contribute an amount not less than 5 per cent of their general funds for sanitation primarily.

A municipality already contributing 8 per cent for health funds, for example, in order to be able to give its portion for hospitals does not, more often than not, deduct its 3 per-cent contribution from the general funds, but from the amount already voted for health funds; for the simple reason that sanitation is the less popular of the two. Hence, the health organization heretofore working and spending on 8 per-cent basis becomes affronted by an unsurmountable deficit, caused by none other than its kin, the “hospital funds.” For which reason, that law which purports to help out sanitation, becomes, on the contrary detrimental to it.

And to obviate this inconvenience, the writer proposes the amalgamation of both funds into one to be called the “health funds,” designed not only for sanitation purposes, but for the operation and maintenance of hospitals as well. Such fund to consist of not less than the 15 per-cent contribution of each one of the municipalities, except that in which the hospital is established which will contribute not less than 20 per cent; and

the provincial general funds pairing the total contribution of the municipalities. Only thus can our "health funds" become more consistent, our improvements more permanent, and our hospitals lead a less miserable life; because it is an undeniable fact that hospitals thrive only where there are millionaires, big corporations, or a government to support them. A hospital depending only upon charity soon dies of inanition, and our hospitals must depend only on the Government to live.

If that minimum 15 per-cent is established by law, we would not have to regret the actual occurrence of campaigning every year for the permanence of the health fund per centum; and would not have to suffer the yearly ebbs and tides of our money, where if the Red Cross or the Welfare Board or what not, needs funds, such has to be necessarily deducted from the health funds per centum of the municipality incumbent.

If such law be enacted, we would further propose that not more than 50 per-cent of the health funds be designed for the operation and maintenance of hospitals and dispensaries.

Other advantages of this amalgamation are: (1) The district health officers with their personnel, not the hospital staffs, will be the only ones to campaign for it, when an increase is needed, wherefore the hospital authorities would not be diverted from their important duties, if they had to do another campaigning; (2) the interchange or assignation of personnel from the district health officers' to the hospital or vice-versa, in case of need, thus obviating the necessity of having to recurr to the Central Office at Manila, which though small is none the less an inevitable red tape.

As the conditions stand actually, where the district health officer is bound to give away for hospitals from the health funds without expectation of reciprocity, in the long ways, frictions among members of the same service are likely to develop.

This is one of the biggest problems that has affronted the writer for many years of his incumbence in the Service, and he believes the same problem has also been experienced by many a member of his audience.

And after a careful and long study, unhesitatingly he thinks this the only solution.

## MISCELLANEOUS

---

### ABRA

Cases of measles appeared in Bangued, and all preventive measures were taken and after a week of constant vigilance, the disease was practically controlled. Similar preventive measures were also adopted among other municipalities infected.

### ALBAY

Three hundred sixty yaws cases were treated in the Island of Catanduanes, 346 in the town of Virac, and 14 in Calolbon. The campaign is still being pushed on.

The general sanitation of the province is excellent. The death rate is below normal while the birth rate is high.

### BATAAN

Encouraged by the success brought about by the adoption of the Sanitary Code at Dais, a systematic sanitary campaign based on said code was undertaken in Samal from April 18 to April 30. Two sanitary inspectors from other municipalities were detailed to work in this campaign, besides the sanitary inspector of the above municipality. The district health officer directed the campaign at its opening, and later the president, First Sanitary Division, continued the work by April 26, a total of 335 sanitary orders were issued, 81 of which provide for the compulsory construction of Antipolo closets; 122 relate to insanitary premises, giving special attention to the arrangement of stagnant water found below the kitchens, and 32 dwell on the compulsory construction of hog's shed. The town people are willing to comply with these sanitary regulations. Several public health conferences were given by the District Health Officer.

### BATANGAS

One hundred sixty-one Antipolo closets were being constructed in 14 municipalities; 469 persons were given pure-cholera vaccination; 2,354 persons with mixed vaccine; 23 conferences were given to presidents of Sanitary Divisions. A general campaign for the eradication of common communicable diseases was also launched.

The most common communicable diseases that occurred by municipalities were: Amoebic dysentery: Balayan 1-1; Bacillary dysentery: Lipa 1-1 and Rosario 1-1; Typhoid fever: Bauan 1-1; and Influenza: Lipa 3-3 and Taal 1-1. The usual preventive measures were taken.

### BOHOL

The following municipalities were inspected during the month; Ubay, Jao Island, Talibon, Jetafe, Inabanga, Mansana, Tagbilaran, Carmen,

Sierra Bullones, and Corella. Talibon has now seven artesian wells that supply the people much pure water supply. But, other lines of sanitation were not found satisfactory. In spite of the great effort exerted a long time ago for the construction of Antipolo closets in all the public markets, until now none of them has complied with the order. The system for garbage disposal was also found far from being satisfactory.

Only the municipality of Sevilla was given mixed cholera and typhoid vaccination during the month.

#### CAVITE

On April 29, the Committee on Beriberi Investigation arrived in this district to study beriberi situation here. The Committee is composed of Doctors Sison and Salud, and a schedule naming municipalities to be visited was made. During the month, the following places were inspected: Naic; Guyam; Indang; Mendez-Nuñez; Alfonso; Rosario; Tanza; Corregidor; Zanja Mayor; Tanza: San Nicolas Mambog; Bacoar, and Palico; Imus.

#### CEBU

Physical examination of the public school children was done daily. In the Leper Detention Camp, daily visits were made to treat sick lepers to detect those suffering from other diseases. Immediate treatment were given to the sick.

An average total of 100 injections were given daily at the detention camp.

#### COTABATO

##### IMPORTANT WORK ACCOMPLISHED

The outbreak of dysentery in the municipality of Cotabato and the surrounding barrios was almost controlled during the month, the incidence in the outlying districts remain the same, without any danger of development into an epidemic. The careless drinking of unsafe water and its use for other culinary purposes were believed responsible for this epidemic.

Anti-variolic vaccination and anti-cholera injections were given to home-seekers and homesteaders, who arrived in Cotabato on April 15, 1927.

The yaws clinic was well attended by the people coming from different places in the interior of the province.

#### DAVAO

Malaria: The malaria control area at Libby and Talomo of the municipality of Davao was checked, as it was reported that the manager of the plantation had stopped the spraying of Paris Green in view of the absence of malaria cases. The district health officer had, however, succeeded in convincing them to continue again the spraying of all breeding places of mosquitoes. A general survey to determine the presence of mosquito larvæ was made in Malita, especially in the plantation, and it was discovered that the mianismus variety was present in the streams. Examination for splenic index was not made possible among the school children, because the classes were already closed for vacation.

##### GENERAL HEALTH CONDITION

The malaria situation in this province is improving.



**ILOCOS NORTE**

The incident of influenza and measles found in the inspection trip during March, has greatly diminished during the month. Malaria, however, seems to be on the same condition. In Bangui, a wide scale treatment of all chronic cases of malaria by means of hypodermic injection of urea and quinine was tried. This trial was conducted by the sanitary president of Bangui, a trained sanitary inspector and the district nurse. This remarkable work has been partly responsible for the decrease of morbidity in Bangui during the month.

The general health condition of the province is now fair. There was no epidemic of any disease reported during the month.

**LANAO**

In order to establish confidence and voluntary report of lepers in the district, a regular weekly visit is now being conducted by this Office in Watu to treat lepers who refused to see any sanitarian for examination. The provincial governor's office has furnished transportation facilities for this purpose. It is believed, that the establishment of a local leper colony in Lanao is the only feasible way to segregate lepers in the district.

During the month, there were 356 persons vaccinated against smallpox, 110 of whom were moros; 1,387 against cholera and typhoid were also performed.

**LEYTE****GENERAL HEALTH CONDITION**

Although cases of amoebic and bacillary dysentery, diarrhea and enteritis, measles, and varicella were registered, yet the mortality rate was not high, the health barometer being 11.256, hence excellent.

**NUEVA VIZCAYA**

There were 102 deaths with 24 infant mortality; 153 births during the month compared to 108 deaths with 17 infant mortality and 136 births during the period corresponding to that of last year.

**OCCIDENTAL NEGROS**

Fourteen lepers were sent to Cebu via Escalante and Tuburan. One of them was apprehended and detained at the detention camp.

**SULU**

The party of Vice-Governor-General Gilmore has honored the district by its visit during the month. The party was conducted to Camp Andres and other places. The Sulu Public Hospital as well as the Contaguaus Hospital was inspected. In his speech in Camp Andres, the Vice-Governor urged the people to coöperate with the Philippine Health Service in the enforcement of health measures and regulations and specially that which relates to anti-smallpox vaccination. The need of more additional aid was emphasized to him.

On April 9th, Maimbung, Indanan, and Camp Andres were inspected by the members of the Legislative party headed by Senate President Manuel L. Quezon. The whole day was spent furnishing the party with the necessary information requested.

**SURIGAO**

A vigorous campaign against dysentery, threatening to spread in the main town of Surigao was conducted under the direct control of this Office. The task was gratified by disappearance of the disease. A House-to-house inspection and lectures were made, and the people were encouraged to have their children infected with yaws treated. No compulsory treatment was enforced, as it was observed, that the people seems to be reluctant against the neosalvarsan remedy.

**ZAMBALES**

The Camilla Simpson Hospital at Olongapo was inspected by the provincial health executive and through the courtesy of Mr. Robbins, 4 cases of malaria were shown, 3 of which are benign tertian and 1 malignant tertian, 1 case of conjunctivitis and 1 case of tuberculous orchitis. With the Rockefeller employees and the sanitary inspector at large the Gordon's Farm where plenty of *Anopheles* larvæ were found in the water tanks on the banks of two rivers, and on fish ponds. The president, 1st sanitary division, the sanitary Inspector of Subic and the sanitary inspector at large, here directed to held the Rockefeller employees in the present malaria campaign in Olongapo. The present campaign consists of spraying of Paris green in the rivers and swamps by the aid of a hydroplane and spraying pump.

**ABRA**

Physical examination of school children was performed with the attendance of the president, First Sanitary Division, who is not a physician, in order that he could carry out this line of activity in his division. A general survey in connection with dysentery epidemic at Bangued and Tayum was conducted and preventive measures were taken.

**BATANES**

An intensive campaign against diarrhea and enteritis and amoebic dysentery was launched during the month in almost all the municipalities of this province. A house-to-house inspection and vaccinations against cholera, typhoid and paratyphoid have been thoroughly performed.

**BATANGAS**

The principal activities of this office for the month were: House-to-house inspections to detect the presence of communicable diseases; general disinfection of public markets, public and private closets; 167 Antipolo closets were constructed in 12 municipalities; 24 school buildings and 3,059 school children were inspected and physically examined respectively. and 3,710 persons were given pure cholera vaccinations, 1,136 with pure typhoid, and 76 with mixed vaccine.

**BOHOL**

In view of the appearance of mild cases of amoebic dysentery, measles, varicella, and influenza, Doctor Balon was detailed during the month to make inspection trips in order to investigate the prevalence of these diseases so that the necessary steps may be taken for their suppression.

**CEBU**

A convention of non-technical personal of the district was held in the City of Cebu from May 4th to 7th. This convention was attended by all the assistant sanitary inspectors.

The district office participated at the Carnival held in the City of Cebu from May 6th to 15th. A fund for this purpose was set aside and approved by the provincial board.

One big cottage was recently constructed to accommodate the increasing number of lepers confined at the leper detention camp.

**COTABATO**

A total of 413 school children were given physical examination during the month, and those who were found afflicted with some disease were adequately treated. Those suffering from trachoma were isolated and treated at the yaws clinic at Parang and Dulawan.

**LEYTE**

During the month anti-cholera vaccination was carried out in a systematic manner on a larger scale. Although the reports are still incomplete, the estimated total vaccination will not be under 50,000 for the month. It may be stated that the impeding cholera outbreak was checked by the intensive anti-cholera vaccination conducted by the office.

Articles on public health and sanitation were published in the local vernacular paper and one of the articles was about influenza and its prevention.

**MASBATE**

A dysentery epidemic broke out in the barrio of Uson about the middle part of April. The following measures were taken to check the spread of the disease: House-to-house inspection for the detection of cases, together with the giving of sanitary instructions to the members of the household and construction of Antipolo closets for the proper disposal of excreta.

**NUEVA VIZCAYA**

The following were accomplished during the month: 313 drinking wells were inspected; 427 indigents were given medical treatment by sanitary inspectors; 11 public schools were inspected; 2 new Antipolo closets were built; 458 persons were vaccinated against smallpox of which 211 were positive.

**SULU**

The construction of the dispensary building at Parang was started and is expected to be completed this month. The building will cost about ₱3,000.

**ZAMBALES**

The district health officer has delivered a series of lectures before the seventh-grade class of the Iba Farm School. About 30 persons attended this lecture.

On July 4th, another lecture was given before the Iba Women's Club held at the Zambales High School with an attendance of about 150 persons.

## EPIDEMIOLOGICAL NOTES

From the report of the Bureau of Hygiene, Oriental Department of the League of Nations, the following data are taken:

### SMALLPOX

In Japan, during the months of June and July, 34 cases of smallpox have been registered.

In Siam, 14 cases with 4 deaths had occurred during the last part of July. The disease is prevalent in Bombay, Bengala, and Madras. In India, according to report corresponding to the month of July, 45 cases with 23 deaths have been reported from different parts of the country. In Hongkong, the number of cases is decreasing considerably. No case was registered in the Philippines, although an unconfirmed suspect was reported in Pontevedra, Capiz.

### CHOLERA

Cholera was prevalent in French Indo-China during the early part of July. There were 213 cases with 168 deaths that were reported from 12 provinces. In Siam, 44 cases with deaths were registered during July. According to telegraphic reports, there occurred 143 deaths in India, while in Persia there were 174 cases with 140 deaths. No case of cholera was reported in the Philippines. The Quarantine Service of the Islands has taken steps to prevent the introduction of the disease by passengers coming from Amoy and Shanghai.

### PLAGUE

This disease still exists in Batavia and Soerabaya and some part of India. The condition in the Orient as a whole is satisfactory. No case so far has been reported from China and the Philippines.

### DYSENTERY

This disease has caused many deaths in Manila and the provinces (Philippine Islands) during June and July. The Provinces of Tayabas, Laguna, Abra, La Union, Ilocos Sur, Masbate, and other places were mostly affected but are fast being freed from the epidemic.

### TRACHOMA EPIDEMIC IN PANGASINAN

A trachoma epidemic broke out in Pangasinan, and the towns mostly affected were Bayambang, Bautista, Alcala, Rosales, San Nicolas, Natividad, Tayug and Santa Maria. From 300 to 500 cases were registered in each of these places. Those greatly affected were children with ages ranging from 7 to 15 years. As a suppressive measure, an emergency hospital was opened in Lingayen.

### HYDROPHOBIA ATTRIBUTED TO NEGLIGENCE

In a statement issued by Major Hitchens, it is his belief that the increasing number of cases of hydrophobia is due to the gross neglect of dog owners and the inactivity of dog catchers. The major's investigation reveals that 1,022 Manila residents and 1,027 persons from the provinces were given anti-rabic treatments by the Bureau of Science in 1926.

## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of July, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1927<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	294,137
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All Others.....	2,186
<b>Total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I, MEJIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,539</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,238
5. Quiapo.....	15,862
6. San Miguel.....	4,434
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,232</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,816
9. Intramuros.....	14,625
10. Ermita.....	16,139
11. Malate.....	16,471
12. Paco.....	16,037
13. Pandacan.....	5,861
14. Santa Ana.....	6,675
<b>Total.....</b>	<b>80,624</b>
<b>Grand total.....</b>	<b>320,394</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, JULY, 1927**

Date	Pres- sure mean <sup>1</sup>	Temperature					Underground	
		In shade <sup>2</sup>					0.50 m.	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	768.74	27.6	33.5	4	22.5	6	30.5	30.6
11-20.....	55.48	26.4	32.3	12	23.5	14,17	29.8	29.7
21-31.....	57.05	26.8	32.6	30,31	23.3	24	28.9	28.9

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	81.9	85.4	5	79.0	1
11-20.....	87.2	93.3	18	83.9	15
21-31.....	86.7	91.3	24	82.6	28

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (open air)		
		Velocity					
		Total	Daily total maxi- mum	Day	Total	Daily maxi- mum	Day
		Kms.	Kms.		mm.	mm.	
1-10.....	E. SW	1,357.5	230.5	8	31.1	3.8	8
11-20.....	SW quad	2,853.0	527.5	16	13.0	2.3	11,15,20
21-31.....	SW	2,806.0	523.0	23	22.6	3.6	28

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	59 40	8 10	4	62.2	3
11-20.....	6 00	2 00	11,15	249.3	9
21-31.....	28 00	7 05	31	160.1	8

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	5	10	15	56.39
Filipinos.....	517	478	995	39.86
Spaniards.....	2	.....	2	12.05
Other Europeans.....	1	1	2	20.93
Chinese.....	26	22	48	31.67
All others.....	6	6	12	64.68
Total and average.....	557	517	1,074	39.19

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I, MEISIC:							
1. Tondo.....	122	108	230	9	10	19	249
2. San Nicolas.....	36	22	58	1	1	1	59
3. Binondo.....	18	17	35	1	1	1	36
Total.....	176	147	323	9	12	21	344
No. II, SAMPALOC:							
4. Santa Cruz.....	77	74	151	2	7	9	160
5. Quiapo.....	18	19	37	2	1	3	40
6. San Miguel.....	15	13	28	1	1	2	28
7. Sampaloc.....	94	103	197	14	6	20	217
Total.....	204	209	413	18	14	32	445
No. III, PACO:							
8. Port Area.....							
9. Intramuros.....	20	14	34	3	1	4	38
10. Ermita.....	10	15	25	2	1	3	28
11. Malate.....	53	46	99	5	4	9	108
12. Paco.....	24	29	53	2	2	4	57
13. Pandacan.....	13	8	21	2	2	4	25
14. Santa Ana.....	15	13	28	1	1	1	29
Total.....	135	125	260	15	10	25	285
Grand total.....	515	481	996	42	36	78	1,074

Attended by physicians, living, 316; stillbirths 80.

Attended by midwives, living, 32; stillbirths 28.

Attended by families, living, 666; stillbirths 1.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	2		2	7.52
Filipinos.....	364	342	706	28.28
Spaniards.....	3	2	5	30.13
Other Europeans.....	1		1	10.46
Chinese.....	19	4	23	15.18
All others.....		1	1	5.89
Total and average.....	389	349	738	27.14

# **NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MAINILA BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MERISIC:</b>			
1. Tondo.....	143	107	250
2. San Nicolas.....	22	18	40
3. Binondo.....	8	12	20
<b>Total.....</b>	<b>173</b>	<b>137</b>	<b>310</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	51	51	102
5. Quiapo.....	10	10	20
6. San Miguel.....	5	5	10
7. Sampaloc.....	64	56	120
<b>Total.....</b>	<b>130</b>	<b>122</b>	<b>252</b>
<b>No. III, PACO:</b>			
8. Port Area.....	1		1
9. Intramuros.....	13	10	23
10. Ermita.....	13	12	25
11. Malate.....	33	29	62
12. Paco.....	16	13	29
13. Pandacan.....	6	9	15
14. Santa Ana.....	4	17	21
<b>Total.....</b>	<b>86</b>	<b>90</b>	<b>176</b>
<b>Grand total.....</b>	<b>389</b>	<b>349</b>	<b>738</b>

# **NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	126	92
Divorced.....		
Widowed.....	27	73
Single.....	322	233
Conditions not stated.....	3	1
<b>Total.....</b>	<b>478</b>	<b>399</b>
<b>Grand total.....</b>	<b>877</b>	
<b>Stillbirths.....</b>		59
<b>Number of deaths with medical attendance.....</b>		587
<b>Number of deaths without medical attendance.....</b>		290



## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	99	91	11	9	210
1 year plus.....	49	44	12	3	108
2 years plus.....	22	19	5	2	48
3 years plus.....	12	12		1	25
4 years plus.....	4	8			7
5 to 9 years.....	13	12	5	2	32
10 to 14 years.....	7	8	2		17
15 to 19 years.....	14	12	8	4	38
20 to 24 years.....	26	6	6	4	42
25 to 29 years.....	22	12	9	6	49
30 to 34 years.....	13	15	3	2	33
35 to 39 years.....	17	12		0	35
40 to 44 years.....	10	14	5	3	32
45 to 49 years.....	11	9	5	3	28
50 to 54 years.....	12	9	3	2	26
55 to 59 years.....	15	4	8	1	28
60 to 64 years.....	17	6	4	1	28
65 to 69 years.....	11	9	1		21
70 to 74 years.....	4	12			16
75 to 79 years.....	3	5	1		9
80 to 84 years.....	7	17		1	25
85 to 89 years.....		3			3
90 to 94 years.....		8			8
95 to 99 years.....		6			6
100 years and over.....	1	1			2
Age not stated.....					
Total.....	389	349	88	50	876

NOTE.—One male Filipino, 30 years of age, permanent residence unknown, not included in the above table.



49	Cancer and other malignant tumors of other or unspecified organs.....	4	1	1	5
51	Acute rheumatic fever.....		2	1	2
52	Chronic rheumatism, osteoarthritis, gout.....				18
55	Beriberi:	10	7	1	2
	a. Infants.....	2			1
	b. Adults.....		1		1
57	Diabetes mellitus.....				1
60	Diseases of the thyroid gland:		1		1
	a. Exophthalmic goiter.....				1
65	Leukemia and Hodgkin's disease:		1		1
	a. Leukemia.....	1	1		2
69	Other general diseases.....				
70-86	III. Diseases of the nervous system and of the organs of special sense.....				
70	Encephalitis.....		1		1
71	Meningitis:				9
	a. Simple meningitis.....	4	5		
74	Cerebral hemorrhage, apoplexy:	6	2	1	9
	a. Cerebral hemorrhage.....		1		1
	b. Cerebral embolism and thrombosis.....				3
75	Paralysis without specified cause:	2		1	5
	a. Hemiplegia.....	3	2		1
77	Other forms of mental alienation.....	1			
78	Epilepsy.....				
87-96	IV. Diseases of the circulatory system.....				
88	Endocarditis and myocarditis (acute).....	2	2		4
90	Other diseases of the heart.....	8	5	1	14
97-107	V. Diseases of the respiratory system.....				
98	Diseases of the larynx.....	1			1
99	Bronchitis:	18	13		31
	a. Acute.....	6	4	1	11
	b. Chronic.....	1			1
	c. Unspecified (under 5 years of age).....				89
100	Bronchopneumonia:	36	50	1	1
	a. Bronchopneumonia.....		1		1
	b. Capillary bronchitis.....				13
101	Pneumonia:	11	2		1
	a. Lobar.....		1		1
102	Pleurisy.....				
107	Other diseases of the respiratory system (tuberculosis excepted):				
	c. Others under this title.....	1			1

**[Stillbirths not included]**

[illegible]



# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													4
5	a. Typhoid fever.....			1	3									3
7	Malaria:			2	1									1
10	a. Malarial fever.....			1	1									2
11	Measles.....			1										1
16	Diphtheria.....													1
21	Influenza.....													1
29	b. Without pulmonary complications specified.....													10
31	Dysentery:													4
33	a. Bacillary.....			8	2									10
40	b. Unspecified or due to other causes.....	1		2	1									4
43-69	Tetanus:			1	1									2
44	a. Others.....			2										2
46	Tuberculosis of the respiratory system.....			5	5									10
47	Tuberculosis of the intestines and peritoneum.....			2	1									3
49	Gonococcus infection.....													1
55	<i>II. General diseases not included in Class I</i>													
57	Cancer and other malignant tumors of the stomach, liver.....													1
62	Cancer and other malignant tumors of the female genital organs.....													1
62	Cancer and other malignant tumors of the breast.....													1
62	Cancer and other malignant tumors of other or unspecified organs.....			1										1
62	Beriberi:													1
62	a. Infants.....													1
62	Diabetes mellitus.....			1										1
62	Diseases of the thymus gland.....			1										1



NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other European		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
143-150	<i>VIII. The puerperal state</i>													
143	Accidents of pregnancy:													
145	b. Ectopic gestation.....				1									1
	Other accidents of labor:				2									2
	c. Others under this title.....													
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>													
152	Furuncle.....			1										1
153	Acute abscess.....			1										1
154	Other diseases of the skin and annexa.....			1										1
164-	<i>XIII. Old age</i>													
164	Senility.....				1									1
165-203	<i>XIV. External causes</i>													
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
195	a. Railroad accidents.....			1										1
	Lightning.....			1										1
	Total.....	1		81	50					5		1		138
	Grand total.....	1		131						5		1		138



INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF JULY, 1927 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month			
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 31 days					
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female				
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female				
All causes.....	110	100	9	8	20	17	2	7	4	1	2	3	37	36	
COMMUNICABLE DISEASES:															
Typhoid and paratyphoid fever (1).....															
Smallpox (6).....															
Measles (7).....															
Whooping-cough (9).....	2														
Diphtheria (10).....															
Influenza (11).....															
Asiatic cholera (14).....															
Dysentery (16).....	2	1													
Meningococcus meningitis (24).....															
Other epidemic and endemic diseases (25).....															
Tetanus (29).....	2	2			2	1		1					2	2	
Other infectious diseases (1-42).....	2														
Beriberi (55).....	11	8			1	3			1		1		3	3	
Diseases of the nervous system (70; 71; 80; 85).....	3	3													
Respiratory diseases (99; 100; 101; 107).....	30	33			1			1	1		1		3	1	
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....	17	13													
Congenital malformation (159).....															
Early infancy (160; 161; 162; 163).....	34	35	9	8	15	13	2	5	2	1	3	2	28	30	
All other causes (43-205).....	7	5			1								1		

**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY  
OF MANILA, DURING THE MONTH OF JULY, 1927 (INCLUDING TRANSIENTS)—Continued**  
[Stillbirths not included]

Causes of death	Age at death under 1 year																								Total under 1 year	
	1		2		3		4		5		6		7		8		9		10		11					
	month +		months +		months +		months +		months +		months +		months +		months +		months +		months +		months +					
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female				
All causes.....	8	12	13	7	7	7	8	6	7	7	3	8	5	7	2	5	5	6	8	2	4	4	3	73	64	
COMMUNICABLE DISEASES:																										
Typhoid and paratyphoid fever (1).....																										
Smallpox (6).....																										
Measles (7).....																										
Whooping-cough (9).....																										
Diphtheria (10).....																										
Influenza (11).....																										
Asiatic cholera (14).....																										
Dysentery (16).....																										
Meningococcus meningitis (24).....																										
Other epidemic and endemic diseases (25).....																										
Tetanus (29).....																										
Other infectious diseases (1-42) 1.....																										
Beriberi (55).....																										
Diseases of the nervous system (70; 71; 80; 85).....																										
Respiratory diseases (99; 100; 101; 107).....																										
Gastro-intestinal diseases (108; 109; 112; 115; 116; 127).....																										
Congenital malformation (159).....																										
Early infancy (160; 161; 162; 163).....																										
All other causes (43-206) 1.....																										

NOTE: Number in parenthesis are the corresponding numbers in the International list of causes of death.  
1 Other than those specified above.

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set .....	16,910
Number of rats caught by spring traps.....	2,650
Number of cage wire traps set .....	593
Number of rats caught by cage wire traps.....	34
Number and kind of baits (coconuts).....	18,312
Number of poison portions placed.....	18,276
Number of rats found poisoned .....	321
Number of rats killed by clubs and other weapons.....	971
Number of rats found dead from other causes.....	508
Total number of rats otherwise caught, found dead or killed .....	4,484
Total number of rats sent to the laboratory for examination .....	4,484
Total number of rats found positive for plague .....	0

# TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF JULY, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total			
	Male		Female		Male		Female		Male		Female					
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.	No. 13.	No. 14.		
I.	4	2	1	1	1	2	2	6	4	1	1	1	7	5		
	2	1	1	1	1	1	1	2	1	1	1	1	3	3	1	1
II.	2	1	1	1	1	1	1	2	1	1	1	1	3	3	1	1
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
III.	4	1	1	1	1	1	1	4	1	1	1	1	4	1	1	1
	3	3	2	2	2	2	2	3	3	3	2	2	5	3	3	3
	2	1	3	1	1	1	1	2	1	1	1	1	6	5	1	1
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Grand total.	18	9	12	1	2	2	2	20	11	12	1	1	32	12		

## REMARKS:

Cases confirmed as typhoid fever.....	32
Cases confirmed as paratyphoid fever.....	0
By autopsy.....	.....
By blood culture.....	0
By Widal reaction.....	0
By urine examination.....	0
By feces examination.....	1
By clinical symptoms.....	31
Cases reported among nonresident persons not included in the table.....	18
Deaths reported among nonresident persons not included in the table.....	4

Typhoid carrier—None.

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female				
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	
I.	No. 1.....	7	2	3	1	7	6	4	4	14	8	9	5	23	13
	No. 2.....	4	1	1	1	1	1	1	1	5	2	1	1	6	2
	No. 3.....	2	1	1	1	1	1	1	1	3	1	3	1	4	1
	No. 4.....	6	2	3	1	2	1	1	1	8	3	1	1	11	4
II.	No. 5.....	4	1	2	1	1	1	1	1	5	1	3	1	8	2
	No. 6.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	No. 7.....	8	4	4	1	7	5	2	1	15	9	6	2	21	11
	No. 8.....	2	1	1	1	1	1	1	1	2	1	1	1	2	1
III.	No. 9.....	2	1	4	2	1	1	2	1	3	1	6	2	9	3
	No. 10.....	2	1	4	2	1	2	2	1	3	1	4	2	7	3
	No. 11.....	6	2	3	2	3	2	1	1	9	4	2	1	13	7
	No. 12.....							2	1					2	1
No. 13.....															
No. 14.....															
Grand total.....	42	11	23	7	24	16	12	8	66	27	35	16	101	42	

REMARKS:

Amoebic dysentery.....	10
Bacillary dysentery.....	52
Unspecified.....	39
Cases reported among nonresident persons not included in the table.....	33
Deaths reported among nonresident persons not included in the table.....	14
Dysentery carrier—3.	

**CHOLERA REPORTED DURING THE MONTH OF JULY, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.	No. 1.....													
	No. 2.....													
	No. 3.....													
	No. 4.....	1							1				1	
II.	No. 5.....													
	No. 6.....													
	No. 7.....													
	No. 8.....													
	No. 9.....													
	No. 10.....													
III.	No. 11.....													
	No. 12.....													
	No. 13.....													
	No. 14.....													
Grand total.....	1								1				1	

**REMARKS:**

No nonresident case was reported during the month.

Cholera carrier—11.

## DIPHTHERIA REPORTED DURING THE MONTH OF JULY, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. ...	2	1							2	1			2	1
{ No. 1. ....														
{ No. 2. ....													1	
{ No. 3. ....	1								1				1	
{ No. 4. ....	1								1					
II. ...														
{ No. 5. ....														
{ No. 6. ....													1	
{ No. 7. ....	1								1					
{ No. 8. ....														
{ No. 9. ....														
{ No. 10. ....			1								1		1	
{ No. 11. ....														
{ No. 12. ....														
{ No. 13. ....														
{ No. 14. ....														
Grand total. ....	5	2	1						5	2	1		6	2

## REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—None.

4  
2

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF JULY, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	12	3		
Varicella.....	2	2		
Varioloid.....				
Smallpox.....				
Measles.....	2	1		
Whooping cough.....	3		3	
Influenza.....	18	9	1	2
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	169	132	86	70
Tuberculosis of other organs.....	15	11	13	6
Beriberi, infantile.....	11	7	11	7
Beriberi, adult.....	2	1	2	

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	20	5	2	1
Varicella.....	11			
Varioloid.....				
Smallpox.....				
Measles.....	3	3	1	
Whooping cough.....				
Influenza.....		2		1
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	24	21	8	5
Tuberculosis of other organs.....	2	1	2	1
Beriberi, infantile.....		1		1
Beriberi, adult.....		1		

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES FOR  
THE MONTH OF JULY, 1927**

Sera and vaccines	On hand July 1, 1927	Received during the month	Total to be accounted for	Distrib- uted during the month	Remain- ing at the end of the month
Antidiphtheric serum (units).....	470,000	500,000	970,000	200,000	770,000
Antidysenteric serum (ampoules).....	32	2,400	2,432	2,187	245
Antitetanic serum (units).....	800,000	500,000	1,300,000	400,000	900,000
Cholera vaccine (c.c.).....	22,660	69,000	91,660	81,940	9,720
Dried vaccine virus (units).....	118,600	91,200	209,800	102,300	107,500
Dysenteric vaccine (c.c.).....	750	9,650	10,400	10,400	
Fresh vaccine virus (units).....	293,900	200,000	493,900	146,900	347,000
Gonococcus vaccine (ampoules).....		100	100	100	
Mixed typhoid cholera vaccine (c.c.).....	75,080	90,000	165,080	123,740	41,340
Normal horse serum (ampoules).....					
Streptococcus vaccine (ampoules).....					
Typhoid vaccine (c.c.).....	5,400	33,000	38,400	34,680	3,720



Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated						Total		
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over				
			Never	Successfully	Unsuccessfully	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
No. 1.	Tondo.....	278	240	6	32	198	21	8				206	21
	San Nicolas.....	98	83		15	85	10					85	10
	Binondo.....	1,384	196	1,173	15	82	14	2				84	14
	Santa Cruz.....	706	196	467	43	105	8	39	14	273	126	417	148
No. 2.	Quiapo.....	48	38		10	41	4	5				46	4
	San Miguel.....	6	4		2	15						15	
	Sampaloc.....	212	147	25	40	183	12	42	11			225	23
	Port Area.....												
No. 3.	Intramuros.....	84	75		9	38	9					38	9
	Ermita.....	137	92		45	131	43	6				137	43
	Malate.....	147	107		40	75	18	8	3			83	21
	Paco.....	105	58	3	44	55	11	17	8			72	19
	Pandacan.....	57	52		5	39	4					39	4
	Santa Ana.....	56	50		6	27	2	6				33	2
Total.....		3,318	1,338	1,674	306	1,074	156	133	36	273	126	1,480	318

Vaccine virus:

Received .....	Units
Used .....	15,700
Remained .....	6,280
	9,440

# ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF JULY, 1927

388

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.	Tondo.....	69	17	33	12	102	29
	San Nicolas.....	19	7	1	4	20	11
	Binondo.....	16	5	7	.....	23	5
	Santa Cruz.....	559	7	273	.....	832	7
	Quiapo.....	18	9	6	1	24	10
No. 2.	San Miguel.....	.....	.....	.....	.....	.....	.....
	Sampaloc.....	38	19	18	1	56	20
	Port Area.....	.....	.....	.....	.....	.....	.....
No. 3.	Intramuros.....	24	10	6	3	30	13
	Ermita.....	4	4	.....	1	4	5
	Malate.....	23	18	9	7	32	25
	Paco.....	.....	3	.....	.....	.....	3
	Pandacan.....	.....	.....	.....	.....	.....	.....
Total.....		770	99	353	29	1,123	128

Health districts	Municipal districts	Number of injections made in—										Total number of injections					
		Adults					Children					First		Second		Third	
		First injections		Second injections		Third injections		First injections		Second injections		Third injections		V.		V.	
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1	Tondo	3,760	1,895	39	1,500	15	1,157	16	866	39	5,260	15	3,620	16	2,761		
	San Nicolas	1,263	344	5	1,589	5	1,097	68	1,908	5	2,852	5	1,441	260			
	Binondo	971	571	...	4,143	...	3,604	...	...	...	5,114	...	4,315	2,479			
	Santa Cruz	767	434	...	166	...	36	...	28	...	933	...	470	379			
No. 2	Quiapo	21	351	...	100	...	166	1	13	...	121	...	205	1	148		
	San Miguel	27	135	...	4	...	24	...	40	...	31	...	99	195			
	Sampaloc	1,394	155	...	572	...	541	37	536	17	1,966	21	1,731	37	1,554		
	Port Area	208	1,018	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 3	Intramuros	165	36	1	41	...	34	...	...	1	249	...	139	...	36		
	Ermita	1,495	211	...	60	...	70	...	276	...	225	...	229	...	487		
	Malate	844	1,057	9	163	7	205	4	696	9	1,658	7	1,262	4	1,763		
	Paco	586	411	...	416	...	339	1	208	...	1,260	...	929	1	619		
	Pandacan	280	803	...	458	...	1,160	...	2,646	...	1,044	...	1,755	...	3,449		
	Santa Ana	144	244	...	66	...	107	...	813	...	346	...	837	...	1,057		
			19	...	67	...	1	...	20	...	211	...	2	...	39		
	Total	11,925	7,098	71	9,345	43	8,541	59	8,118	71	21,270	43	16,534	59	15,216		

1 Mixed typhoid and cholera vaccine used for the first and second injections.

Pure typhoid vaccine used for the third injections.

"V." in persons never vaccinated before; "R." revaccinations.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	8,408	1,689	2,276	4,443
Agusan.....	3,755	1,064	979	1,712
Albay.....	42,026	8,075	8,281	25,670
Antique.....	9,679	2,479	4,462	2,738
Bataan.....	9,710	3,592	3,073	3,045
Batanes.....	2,160	170	404	1,586
Batangas.....	38,431	11,380	8,330	18,721
Bohol.....	9,304	3,076	2,638	3,590
Bukidnon.....	3,425	1,132	830	1,463
Bulacan.....	13,629	4,978	4,252	4,399
Cagayan.....	46,385	9,117	28,424	8,844
Camarines Norte.....	61,413	4,476	41,477	15,460
Camarines Sur.....	20,485	5,038	6,620	8,827
Capiz.....	25,268	5,925	11,418	7,925
Catanduanes.....	11,640	2,705	1,617	7,318
Cavite.....	16,368	3,329	7,220	5,819
Cebu.....	70,156	24,307	10,428	35,421
Cotabato.....	14,289	4,305	4,411	5,573
Davao.....	26,928	11,624	8,522	6,782
Ilocos Norte.....	19,744	4,171	5,850	9,723
Ilocos Sur.....	16,857	4,899	1,858	10,100
Iloilo.....	78,656	18,533	49,596	10,527
Isabela.....	28,576	7,289	14,387	6,900
Laguna.....	61,650	10,667	37,337	13,646
Lanao.....	26,919	8,295	13,465	5,159
La Union.....	16,802	3,328	244	13,230
Leyte.....	80,636	22,580	31,958	26,098
Marinduque.....	60,137	4,404	41,536	14,197
Masbate.....	6,447	2,133	1,493	2,821
Mindoro.....	3,235	802	668	1,765
Misamis.....	16,637	5,694	1,708	9,235
Mountain Province.....	29,268	7,890	16,147	5,231
Nueva Ecija.....	17,400	7,568	3,111	6,721
Nueva Vizcaya.....	2,696	946	384	1,366
Occidental Negros.....	68,879	25,572	28,608	14,699
Oriental Negros.....	22,857	7,506	6,568	8,783
Pampanga.....	26,811	6,671	10,303	9,837
Pangasinan.....	35,280	12,676	5,091	17,513
Rizal.....	67,770	11,376	53,333	3,061
Romblon.....	37,240	6,359	21,769	9,112
Samar.....	58,039	10,684	26,387	20,968
Sorsogon.....	12,751	5,701	306	6,744
Sulu.....	7,869	4,499	1,114	2,256
Surigao.....	4,355	2,134	479	1,742
Tarlac.....	18,861	3,967	11,135	3,759
Tayabas.....	23,651	9,935	4,427	9,289
Zamboanga.....	7,236	2,716	1,450	3,070
Zamboanga.....	6,630	1,908	1,074	3,648
Total.....	1,297,348	329,364	547,448	420,536

<sup>1</sup> Incomplete; reports from other provinces not yet received.  
Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	680	366	1,538	1,271	1,376	2,276	3,594	3,913
Agusan.....	188	171	230	130	566	280	984	581
Albay.....	3,643	1,082	5,865	1,388	9,393	4,137	18,901	6,607
Antique.....	983	282	1,141	785	833	1,226	2,957	2,298
Bataan.....	1,903	385	2,524	990	2,106	824	6,533	2,199
Bukidnon.....	185	83	335	168	553	329	1,073	580
Batanes.....	5,478	1,445	7,960	3,179	7,971	6,441	21,409	11,065
Batangas.....	1,277	348	1,833	698	2,236	1,751	5,346	2,797
Bohol.....	84	84	237	300	682	1,296	1,003	1,680
Bulacan.....	4,251	834	2,876	1,335	2,482	1,662	9,609	3,831
Batanga.....	3,285	631	5,607	1,221	10,804	10,604	19,636	12,456
Cagayan.....	1,744	368	4,859	1,513	21,847	10,116	28,450	11,997
Camarinés Norte.....	2,952	988	3,127	1,038	6,556	3,374	12,635	5,400
Camarinés Sur.....	1,991	422	3,094	1,157	8,813	3,380	13,898	4,959
Capiz.....	795	432	902	490	953	649	2,650	1,571
Catanduanes.....	2,892	535	2,654	902	5,646	3,692	11,193	5,129
Cavite.....	7,137	2,197	8,313	2,729	7,591	6,814	23,041	11,740
Cebu.....	359	283	978	937	2,353	2,569	4,250	3,789
Cotabato.....	728	265	2,221	863	10,097	4,330	13,046	5,458
Davao.....	2,677	898	3,968	1,519	4,026	4,482	10,671	6,899
Ilocos Norte.....	2,350	749	3,231	1,336	2,823	2,852	8,404	4,937
Ilocos Sur.....	4,993	842	10,453	3,256	22,080	22,450	37,526	26,548
Iloilo.....	1,691	748	3,790	1,113	8,475	6,543	13,956	8,404
Isabela.....	3,137	645	6,367	2,629	18,041	17,834	27,545	21,108
Laguna.....	474	105	2,206	582	7,677	4,031	10,357	4,718
Lanao.....	2,116	561	2,548	1,924	2,196	3,460	6,855	5,945
La Union.....	3,009	955	9,479	2,840	20,488	8,089	32,976	11,884
Leyte.....	1,118	308	3,860	1,259	21,764	10,240	26,742	11,807
Marinduque.....	581	226	982	374	1,696	930	3,259	1,530
Masbate.....	459	198	377	194	720	496	1,556	888
Mindoro.....	385	392	1,565	765	2,634	1,699	5,184	2,856
Misamis.....	1,019	210	3,130	754	10,430	6,656	14,579	7,620
Mountain Province.....	3,149	959	4,314	1,799	2,565	2,355	10,028	5,113
Nueva Ecija.....	440	215	331	303	465	777	1,236	1,295
Nueva Vizcaya.....	5,451	1,006	8,819	2,424	14,083	11,957	28,353	15,387
Occidental Negros.....	3,162	956	3,356	1,588	5,751	2,943	12,269	5,487
Oriental Negros.....	2,219	590	1,863	701	4,049	4,017	8,131	5,808
Pampanga.....	6,165	1,562	7,255	2,644	6,029	5,508	19,449	9,714
Pangasinan.....	3,739	1,029	5,415	2,380	13,326	20,618	22,480	24,027
Rizal.....	1,208	173	4,388	1,303	13,270	10,056	18,866	11,532
Romblon.....	2,465	816	6,235	3,006	17,498	9,067	26,198	12,889
Samar.....	1,542	651	3,262	1,511	3,771	2,061	8,575	4,223
Sorsogon.....	583	275	1,600	707	3,188	1,642	5,371	2,624
Sulu.....	592	226	862	311	963	460	2,417	997
Surigao.....	1,788	727	2,809	1,613	3,529	5,714	8,126	8,054
Tarlac.....	3,592	642	5,279	1,193	7,801	3,673	16,672	5,508
Tayabas.....	1,232	262	1,229	608	1,103	1,399	3,564	2,269
Zambales.....	364	509	593	1,070	794	1,716	1,751	3,295
Zamboanga.....								
<b>Total.....</b>	<b>102,856</b>	<b>28,636</b>	<b>165,855</b>	<b>62,800</b>	<b>324,693</b>	<b>239,475</b>	<b>593,404</b>	<b>330,911</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	20,748	6,985		27,733
Antique.....	12,208	6,944		19,152
Bataan.....	1,667			1,667
Batangas.....	16,202	40		16,242
Bulacan.....	102,404	135		102,539
Camarines Norte.....	1,841	10		1,851
Camarines Sur.....	13,583	126		13,709
Capiz.....	12,769	5,802		18,571
Catanduanes.....	102			102
Cavite.....	336			336
Cebu.....	57			57
Ilocos Norte.....	5,969	2,469		8,438
Iloilo.....	18,764	3,771		22,525
Isabela.....	77			77
Laguna.....	3,044	460		3,504
Leyte.....	4,323	1,547		5,870
Marinduque.....	502	280		782
Nueva Ecija.....	123	33		156
Pampanga.....	43,403	5,703		49,106
Pangasinan.....	8,326	4,425		12,751
Rizal.....	16,123	1,231		17,354
Roñblon.....	1,690	106		1,796
Samar.....	73	73		146
Sorsogon.....	2,260	278		2,538
Tarlac.....	5,065	831		5,896
<b>Total.....</b>	<b>291,649</b>	<b>41,249</b>		<b>332,898</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	320	266	112	698
Batangas.....	3,317	1,536	140	4,993
Bulacan.....	1,905	949	657	3,511
Camarines Sur.....	97	19		116
Catanduanes.....	7	6		13
Iloilo.....	1,979	933	357	3,269
Laguna.....	2,850	1,505	846	5,201
La Union.....	267	242	244	753
Nueva Ecija.....	587	369	139	1,095
Pampanga.....	1,327	1,543	803	3,673
Pangasinan.....	2,217	1,787	1,169	5,173
Rizal.....	1,526	486	56	2,068
Samar.....	2			2
Sorsogon.....	115			115
Tarlac.....	665	270	20	955
<b>Total.....</b>	<b>17,181</b>	<b>9,911</b>	<b>4,543</b>	<b>31,635</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	7,503	1,924		9,427
Bataan.....	1,045	708		1,753
Batangas.....	3,809	2,321		6,130
Bohol.....	2,634	1,921		4,555
Bulacan.....	1,315	586		1,901
Cagayan.....	3,054	1,217		4,271
Camaringes Norte.....	220	119		339
Camaringes Sur.....	844	312		1,156
Cavite.....	25,314	23,861		49,175
Cebu.....	14,701	3,346		18,047
Cotabato.....	495			495
Davao.....	2,198	1,378		3,576
Ilocos Norte.....	2,096	1,126		3,222
Ilocos Sur.....	2,555	2,015		4,600
Iloilo.....	5,104	3,146		8,250
Izabela.....	63	56		119
Laguna.....	84	79		163
Lanao.....	3,539	1,227		4,766
La Union.....	4,062	2,552		6,614
Leyte.....	4,988	670		5,658
Marinduque.....	794	265		1,059
Masbate.....	1,225	363		1,588
Misamis.....	8,189	1,849		10,038
Nueva Ecija.....	7,205	2,407		9,612
Nueva Vizcaya.....	2,256	1,824		4,080
Occidental Negros.....	51,504	28,671		80,175
Oriental Negros.....	3,054	1,890		4,944
Pampanga.....	20,330	15,221		35,551
Pangasinan.....	2,381	1,765		4,146
Rizal.....	27,672	14,226		41,898
Romblon.....	54	11		65
Samar.....	2,476	1,171	173	3,820
Surigao.....	861	680		1,541
Tarlac.....	4,507	992		5,499
Tayabas.....	16,807	7,813		24,660
Zambales.....	6,766	6,180		12,946
Zamboanga.....	5,090	1,103		6,193
Total.....	246,794	135,055	173	382,022

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF JULY, 1927**

(No case and no death reported during the month)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF JULY, 1927**

Provinces and towns	Cases	Deaths
Bulacan:		
San Rafael.....	1	1
Total.....	1	1

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF JULY, 1927**

Sanitary orders	Health districts			
	No. 1 Melsic	No. 2 Sampa- loc	No. 3 Paco	Total
<b>Orders pending, July 1, 1927:</b>				
Minor.....	127	146	57	330
Sewer.....	26	49	1	76
Vacating.....	8	11		19
Filling.....	9	35	18	62
<b>Total.....</b>	<b>170</b>	<b>241</b>	<b>76</b>	<b>487</b>
<b>Orders issued during the month:</b>				
Minor.....	36	2	11	49
Sewer.....	2			2
Vacating.....				
Filling.....	4			4
<b>Total.....</b>	<b>42</b>	<b>2</b>	<b>11</b>	<b>55</b>
<b>Orders completed during the month:</b>				
Minor.....	13	6	7	26
Sewer.....				
Vacating.....				
Filling.....				
<b>Total.....</b>	<b>13</b>	<b>6</b>	<b>7</b>	<b>26</b>
<b>Orders cancelled during the month:</b>				
Minor.....				
Sewer.....	1			1
Vacating.....				
Filling.....				
<b>Total.....</b>	<b>1</b>			<b>1</b>
<b>Orders pending July 31, 1927:</b>				
Minor.....	150	142	61	353
Sewer.....	27	49	1	77
Vacating.....	8	11		19
Filling.....	13	35	18	66
<b>Total.....</b>	<b>198</b>	<b>237</b>	<b>80</b>	<b>515</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	25	61	20	106
<b>Permits for minor building constructions:</b>				
Approved.....	37	45	24	106
Disapproved.....	15	9	7	31
<b>New buildings completed.....</b>	<b>7</b>	<b>18</b>	<b>19</b>	<b>44</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	11	23	28	62
Disapproved.....	1	2	3	6
<b>Prosecutions:</b>				
Convictions.....	4			4
Dismissals.....		2	1	3
Amount of fines.....	P10.00			P10.00
<b>Plumbing permits issued.....</b>	<b>37</b>	<b>68</b>	<b>43</b>	<b>148</b>
<b>Plumbing projects completed.....</b>	<b>41</b>	<b>60</b>	<b>43</b>	<b>144</b>
<b>Premises connected to the sanitary sewer to June 30, 1927.....</b>	<b>2,514</b>	<b>4,307</b>	<b>712</b>	<b>7,533</b>
<b>Connected during the month.....</b>	<b>2</b>	<b>8</b>	<b>5</b>	<b>15</b>
<b>Total.....</b>	<b>2,516</b>	<b>4,315</b>	<b>717</b>	<b>7,548</b>

Melsic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

# MONTHLY BULLETIN

OF THE

## PHILIPPINE HEALTH SERVICE

VOL. VII

AUGUST, 1927

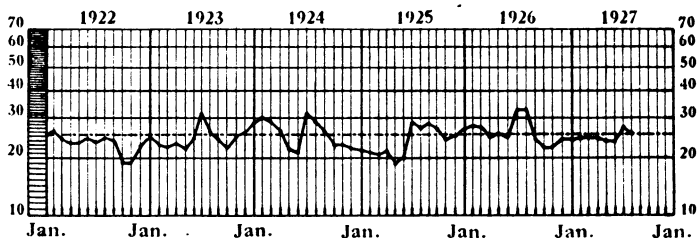
No. 8

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
The Anticholera Campaign of 1926 in Mindoro, By Dr. ANTONIO EJERCITO .....	397
The New School of Public Health, by Acting President JORGE BOCOBO..	427
Full Text of Last Report of Late Governor Wood.....	429
Miscellaneous .....	431
General Statistics.....	435

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VII**

**AUGUST, 1927**

**No. 8**

**THE ANTICHOLERA CAMPAIGN OF 1926 IN MINDORO**

By **ANTONIO EJERCITO, M.D.**

*Surgeon, Division of Communicable Diseases,  
Philippine Health Service*

**THE CALL TO DUTY**

In response to the call of the Director of Health, the necessary personnel to take up the anticholera campaign in Mindoro was soon assembled at the P. H. S. Central Office, at 8 a. m. on Saturday, January 3, 1926. The personnel consisted of Dr. G. Intengan, chief of the Division of Provincial Sanitation, the undersigned from the Division of Communicable Diseases, and seven insular vaccinators. After receiving the necessary instructions from the Director, the personnel was directed to leave for Mindoro at 2 p. m. on board the coast guard *Mindoro*, altho the ship did not actually leave until 5.15 p. m. of the same day, because of the indisposition of some members of the crew. Major A. P. Hitchens from the Governor-General's office joined the party on board the ship. The party reached the town of Pinamalayan, Mindoro, at 11.30 a. m., Monday, January 4, 1926.

**ANTICHOLERA VACCINATION**

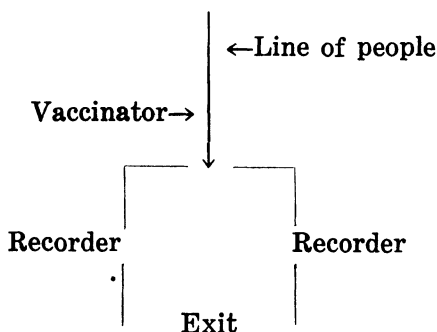
On reaching the town of Pinamalayan, a conference was held with the town officers and people on the value of vaccination as prophylaxis against cholera. In the town itself, there had not been any case of cholera registered yet. On the afternoon of the day of arrival, vaccination was begun; and in the evening the party left for the barrio of Aagsalin, but two insular vac-

nators were left in the town to complete the vaccination and with the instruction that on finishing their task they would carry on vaccination in the barrios toward Agsalin.

The barrio of Agsalin was the seat of the cholera epidemic in the island of Mindoro. The party began the anticholera work in that barrio on Tuesday morning, January 5, 1926. The vaccinators set to work and vaccinated practically the whole population on that day. Dr. G. Intengan and Major A. P. Hitchens, after giving due instructions to the party, left on board the *Mindoro* for the coast towns of the island, while the undersigned remained in the barrio. On the afternoon of the same day, two vaccinators left the barrio of Agsalin to vaccinate the people of the chain of barrios along the shore toward Pinalayan, to meet later the two vaccinators left in that town. Three vaccinators left for opposite southward directions to go on vaccinating the people of the chain of barrios toward the municipality of Mansalay.

The scheme of vaccination followed in the towns and barrios where houses are fairly close together was as follows:

The people were told to meet at some known place; and when they were already gathered together, they were then directed to fall line, and then to pass one by one the vaccinator and the two recorders. One vaccinator was placed with two recorders, inasmuch as one vaccinator could work faster much than one recorder could because recording consumed comparatively more time than did vaccinating. The systematized plan of vaccination can roughly be sketched as follows:



The purpose of the foregoing plan was to facilitate and finish vaccination within a short time. This plan was tried in the barrio of Agsalin and was proved to be successful. Within about three hours, two hundred and seventeen persons of the barrio were vaccinated. However, in the barrios where houses were far apart, the foregoing systematic plan was not feasible, inasmuch as to gather the people together would require a con-

siderable length of time. Thus, house-to-house vaccination was conducted in this instance in order not to lose time.

It is worthy to note in this connection that, before vaccination was begun the vaccinators first reckoned or sought the estimated population of the barrio or town so that they would know just when they would finish or not finish vaccinating the people of the place.

The undersigned had his headquarters at the barrio of Agsalin for the following reasons:

1. It was the seat of the cholera epidemic in Mindoro, and therefore it was the place for epidemiological study.

2. It was the starting-point of the two parties of anticholera vaccinators when they set out to go in opposite directions to vaccinate the people of the chain of barrios and towns along the shore; and, therefore, it was the logical place where he could receive more conveniently the reports on conditions and vaccinations in the place from the two vaccinating parties.

3. Inasmuch as the epidemic still existed and cholera cases were localized in and around the place, he was thereby ready to serve the afflicted, to advise the people of the ways and means to protect themselves from the disease, and to remedy the conditions in the barrio to make it sanitary.

As had been planned out, the undersigned treated patient and from time to time received reports from the vaccinators on total number of vaccinations and the condition of the place where they were. The reports on vaccinations are consolidated and presented in the following page.

In this connection, a sketch map of Mindoro, showing only the places within the field of vaccination, is also included to facilitate the understanding of their locations.

**CONSOLIDATED REPORT OF ANTI-CHOLERA VACCINATION IN THE MUNICIPALITIES OF MANSALAY, BUGABONG, PINAMALAYAN, AND POLA, PROVINCE OF MINDORO**

Places	Date	Unit No.	Adult		Child		Total		Total number
			Male	Female	Male	Female	Male	Female	
	1926								
Bulalacao (Mansalay).....	Jan. 11	3	85	97	107	95	192	192	384
Panag.....	Jan. 14	3	39	33	12	21	51	54	105
Wasig.....	Jan. 12	3	72	46	40	49	112	95	207
Wasig.....	Jan. 14	3	80	77	5	6	85	83	168
Paclasan.....	Jan. 12	3	86	75	94	99	180	174	324
Paclasan.....	Jan. 14	3	12	14	5	6	17	20	37
Paclasan.....	Jan. 13	3	98	78	70	25	163	103	266
Aluyan.....	Jan. 12	3	15	18	.....	13	15	26	41
Darahican.....	Jan. 11	3	4	1	3	1	7	2	9
Dayhagan.....	Jan. 11	3	18	16	10	5	28	21	49
Cawayan.....	Jan. 10	3	48	96	89	17	137	113	250
Cawayan.....	Jan. 15	3	40	38	12	10	52	48	100
Cawayan.....	Jan. 16	3	.....	3	4	3	4	6	10
Camantigue.....	Jan. 10	3	67	41	21	30	88	71	159
Masaquisi.....	Jan. 9	3	69	79	41	30	110	109	219

*Consolidated report of anticholera vaccination in the municipalities of  
Mansalay, Bugabong, Pinamalayan, and Pola, Province of Mindoro—Ctd.*

Places	Date	Unit No.	Adult		Child		Total		Total number	
			Male	Female	Male	Female	Male	Female		
1926										
Bugabong.....	Jan.	7	3	167	148	67	79	234	227	461
Labasan.....	Jan.	6	3	40	46	21	27	61	73	134
Sumague.....	Jan.	6	3	17	14	12	21	29	35	64
Tiquisan.....	Jan.	6	3	32	45	32	35	64	80	144
Bansud.....	Jan.	7	3	17	10	15	7	32	17	49
Bansud.....	Jan.	5	3	10	5	5		15	5	20
Bansud <sup>1</sup> .....	Jan.	16	3	11	10	4	8	15	18	33
Agsalin <sup>1</sup> .....	Jan.	5	3	60	68	48	33	108	101	209
Agsalin.....	Jan.	6	3	8	9	13	6	21	15	36
Agsalin.....	Jan.	16	(x)	75	52			75	62	127
Maragooc <sup>1</sup> .....	Jan.	16	3	7	6	4	4	11	10	21
Maragooc <sup>1</sup> .....	Jan.	18	3	18	22	18	14	36	36	77
Maragooc and Ba- notan.....	Jan.	5-6	2	33	21	24	17	57	38	95
Balete, Dalagan, and Daping.....	Jan.	13	2	81	53	76	52	157	105	262
Tambong and Tan- que.....	Jan.	14-20	2	130	56	104	34	234	90	324
Guinabunan.....	Jan.	6-7	2	28	15	18	17	46	32	78
Papandayan and Ba- nus.....	Jan.	8-9	2	61	45	43	44	104	89	193
Pinamalayan (poblacion).....	Jan.	4-7	1	395	328	325	274	720	602	1,322
Pinamalayan (poblacion) <sup>1</sup> .....	Jan.	17-21	1	205	137	115	88	320	225	545
Do.....	Jan.	21	3	47	49	40	43	87	92	179
Do.....	Feb.	21	2	70	39	16	14	86	53	139
Pinamalayan (poblacion).....	Feb.	12	2	117	79	100	107	217	186	403
Lumang Bayan and P. Tubig <sup>1</sup> .....	Jan.	8-12	1	125	95	73	69	198	164	362
Lumang Bayan.....	Jan.	26-27	3	39	33	50	47	89	85	174
Lumang Bayan.....	Feb.	13	2	47	70	51	39	98	109	207
Cacauan.....	Jan.	9	1	37	38	31	37	68	75	143
Pangalayan, Quina- bigan and Papan- dayan.....	Jan.	11	1	83	42	45	26	128	68	196
Papandayan, Quina- bigan, and Panga- layan.....	Feb.	14	2	138	65	39	39	177	104	281
Manga, Macanlig, and Pantol.....	Jan.	16	1	135	120	116	93	251	213	464
Nabustos, Pangula- yan, and Macalig.....	Jan.	13	1	57	60	64	43	121	103	224
Buli and Macanlig.....	Jan.	15	1	32	32	34	22	66	54	120
Pula, Pola.....	Feb.	1	1	8	15	15	17	23	32	55
Calima and pobla- cion.....	Jan.	31	2	60	45	21	19	81	64	145
Pola (poblacion).....	Jan.	31	1	36	21	17	13	53	34	87
Do.....	Jan.	31	3	63	72	72	70	135	142	277
Do.....	Jan.	30	2	81	79	40	47	121	126	247
Pola Elementary School.....	Feb.	1	3	12	6	33	17	45	23	68
Malibago.....	Jan.	31	1	66	53	50	45	116	98	214
Panikihan.....	Feb.	1	2	28	22	17	11	45	33	78
Calapan (poblacion).....	Feb.	6	2	36	15	14	15	50	30	80
Do.....	Feb.	8	2	31	42	20	9	51	51	102
Salong.....	Feb.	9	2	29	39	17	16	46	55	101
Lazareto.....	Feb.	16	2	23	26	33	20	56	46	102
Grand total.....				3,523	2,950	2,465	2,048	5,988	5,007	10,995

<sup>1</sup> Revaccinations:

Unit No.	Names	Total vaccina- tions
One—Torno and Taboga.....		3,782
Two—Bravo and Ermitaño.....		2,887
Three—Plaza and Ortega.....		4,299
By Provincial Sanitary Inspector <sup>a</sup> .....		127

Grand total..... 10,995

<sup>a</sup> Attention is here invited to the fact that in the foregoing consolidated report of vaccinations, the work of the provincial sanitary inspectors is not included; thus, only those reports received from time to time from the insular vaccinators are specially considered.



threatened with bolo; but thanks to timely aid of constabulary soldiers, the incident did not end seriously. A patient vomited directly on the face of a physician. Other patients absolutely refused treatment because they thought that they might be poisoned. Still others hid themselves and came to be known only when they were already moribund or dead. Many of those superstitious and fanatic, altho they were not harboring enmity against health service men, considered their anticholera work futile, for they were working against the will of God. These people therefore, refused coöperation in the attempt to put an end to the epidemic, because of the belief that it was not within their power to check such epidemic.

After studying the beliefs of many people who thus persisted in their stubborn opposition to health service work, the undersigned therefore devised means for overcoming such obstacles and enlightening the people in such a way that they would whole-heartedly lend their support and coöperation in the grim task of stemming the tide of the cholera epidemic.

Instructive talks to the people were delivered by the undersigned defining what is cholera, explaining in detail how it is contracted, prevented, and treated. It was duly impressed in their minds that the disease causing such havoc in the locality in so short a time was nothing else but cholera, and whatever conception they might entertain about it was absolutely false and totally unworthy of belief by present-day human beings.

The undersigned made it clear to them that the health service men were there, not for the people to hate or threaten, but for them to love and admire, as the health workers were facing all hardships and danger, undergoing all ordeals and tribulations, sacrificing their health and vigor, only to furnish the people with all that was within their power and knowledge to supply for their protection against cholera and impending death.

The health service work as presented to them was twofold; namely, to prevent the spread of cholera and to treat the sick. The undersigned duly explained to them the necessity of the preventive measures, such as quarantine, disinfection of houses, condemnation of suspicious water with disinfectant solution, use of only boiled water for drinking as well as for washing purposes, eating only cooked and wholesome food, keeping the food or anything to be ingested away from flies, thorough washing of the hands and utensils before every meal, keeping the home sanitary and disposing of the garbage and excreta



properly, preventing fowls, dogs, and pigs from roaming. While all the foregoing measures had for their purpose the avoidance of the cholera vibrios from getting into the body, a question was brought up to the effect that, in spite of all proper care, what measures should be taken when the vibrios have already gained entrance into the system? For this question the value of cholera vaccine as a prophylaxis against the disease was discussed in the simplest terms. It was discussed with illustrations on how they excite the production of anti-bodies in the system, which would take care of the vibrios should they gain entrance, and make them inactive in the organism so as to cause no disease.

Such, all in all, comprised the preventive work of the health service men in the locality. Regarding the curative work, the Health Service physicians treated the cholera patients to the best of their knowledge and ability and within the extent of the facilities at their command. It was duly explained to the people that there was no other treatment for cholera patients, but that what they were required to follow was the one sanctioned by the medical profession and, therefore, was logical and scientific. Whatever belief or accusation an individual might launch against the treatment would be uncalled-for and consequently condemnable.

The instructive lectures and conferences given to the people were not in vain, for they created the needed response. The people cast aside their groundless beliefs and superstitions, and came to realize the seriousness of the cholera epidemic. They willingly followed the preventive measures as prescribed in their homes. While before they used to hide or refused vaccination, then, they voluntarily presented themselves for second and even for third cholera vaccination. While formerly they used to hide the sick, then, at the first early symptom they presented the case to the authority concerned and asked for treatment. While heretofore they used to hate and threaten Health Service men, then, they came to consider the health workers as their true friends and companions, worthy of trust and confidence, to whom they vowed to coöperate for ending once for all the cholera epidemic.

#### SANITARY SURVEY OF AGSALIN

Agsalin is a little *barrio* within the jurisdiction of the town of Pinamalayan, Mindoro. It is located in the eastern part of

the island close to the shore. It lies on low sandy land gradually sloping into the sea and covers an area of about four hectares. The weather is generally cold, windy, and rainy.

The *barrio* is populated by Tagalogs and Visayans, numbering in all 233. Of this total, 125 are males and 108 are females. The Tagalogs are natives of Mindoro and immigrants from Marinduque and from Batangas, while the Visayans are mostly from Romblon. The latter predominate over the former so that the place can be appropriately considered a Visayans *barrio*. The people, in general, are dirty and unhygienic in their mode of living. Many are sick of malaria, some of tropical ulcers, and a few of yaws. They are either farmers or fishermen, the former predominating over the latter.

The chief official is the so-called *teniente del barrio* who is responsible for carrying out orders from the town authorities, be they administrative, sanitary, or otherwise. This *barrio* belongs to the Third Sanitary Division of Mindoro and comprises the towns of Pinamalayan and Boñgabon.

At the time of the survey, sanitation in the locality was completely neglected or ignored. Pigs, dogs, and chickens were allowed freely to roam around. House premises were dirty. Most of the people were with their dirty clothes on. The water-supply and the excreta and garbage disposals were very far from satisfactory. Flies, fleas, and mosquitoes constituted a marked nuisance. While flies and fleas were abundant in most houses, mosquitoes at the time of the survey were rare; yet they undoubtedly were dangerous, inasmuch as the place was a malarial locality.

#### WATER-SUPPLY

The people get water for drinking and washing purposes either from the river or from the two surface wells. The wells are about a kilometer distant from the *barrio*, while the river is about a kilometer and half away. The two wells are of primitive type; they are shallow without any concrete or stone lining on the sides; there is no cover so that rain-water can readily get inside. The river rises from a far inland somewhere near the *barrio* of Banos, makes its way at some distance from Agsalin, and passes thru Bansud, a *barrio* near by, into the sea. The current is fast; and, according to information, thruout the course of the river there are no houses near by. Thus, from the sanitary point of view, there is less chance of

pollution in the river-water than in the well-water. At the time of inspection, the water in the wells was markedly turbid, simulating the color of native vinegar in appearance. As is often the case, the rain did much in causing the turbidity of the water in the wells. The river-water was comparatively clearer, altho turbid to a certain extent on account of the rain also.

#### EXCRETA-DISPOSAL

Every house in the barrio has no closet. At the time of the survey, the people had the surface system of excreta-disposal. They did not have, then, a definite place for excreta-disposal, so that should a person walk on the sandy soil near the shore, in all probability he would see feces scattered about. This system of waste-disposal was, of course, not sanitary and is mentioned here only to be condemned, inasmuch as the untreated waste matter lay bare fore the pigs, dogs, chickens, and flies to get on and transmit the germs it might contain to the homes.

#### GARBAGE-DISPOSAL

The people used to get rid of their garbage in a very unsatisfactory manner. They generally threw their garbage in their yards and let the sun dry it out. As a consequence of this custom, the yards of the houses were generally dirty, often reeking with decaying matter. This very simple method of garbage-disposal was undoubtedly a menace to the health of the dwellers. The garbage usually offered a good medium for bacterial growth and for the breeding of flies; and, therefore, its exposure in a place near the home must be condemned.

#### SANITARY NUISANCES

Nuisances are worthy of particular consideration. At the time of the survey, flies were numerous. In each house in the barrio, flies were not difficult to find, inasmuch as they plainly abounded. The abundance of flies in the barrio was undoubtedly due to careless garbage-disposal. Mosquito breeding-places were found in several places in the barrio. There were a number of malarial patients, so that the mosquitoes altho few, constituted nevertheless a dangerous nuisance. Flies, like the flies, were abundant. They were really troublesome, so that persons could not rest well whenever they were active. Indeed, many times people could readily see fleas alighting on clothes or on

the exposed skin of persons; and many times fleas-bites were also common sights. Domestic animals such as pigs, dogs, and chickens, which were allowed to ramble around in the *barrio*, constituted a great nuisance.

#### MISCELLANEOUS

A nipa house of eight-bed capacity, the biggest one in the locality, had been vacated by the occupants and was made temporary hospital for the cholera patients. A comparatively smaller nipa house, not far from the large structure, had been also voluntarily vacated by the occupants and was made a health-station where medicines and supplies could be properly kept and dispensed accordingly, where the recording of the campaign work could be fittingly done, and where other health matters could be well attended to. The *barrio* was under strict quarantine; the Constabulary soldiers were on guard seeing to it that no inhabitant left the place. It was also their duty to enforce order among the people.

#### GENERAL SUMMARY

The conditions found in the *barrio* of Aagsalin are as follows:

1. The place is low, sandy, and gradually sloping into the sea.
2. The people are generally of the ignorant class; and in their *modus vivendi*, sanitation and hygiene is utterly disregarded.
3. The freedom of pigs, dogs, and chickens to ramble around in the *barrio* is tolerated.
4. The river and two surface-wells at some distance from the *barrio* constitute the source of the water supply.
5. Surface-waste disposal at no definite place was, at the time of the survey, the system followed.
6. The disposal of garbage somewhere around the house was then the custom.
7. Flies and fleas were markedly abundant, while the mosquitoes were few.
8. The temporary hospital and health-station were the best houses that could be had in the locality, altho they were far from being satisfactory and lacked the equipment and facilities necessary to make them ideal.
9. The place was under rigid quarantine.

## NEEDED REMEDIES

1. The people were duly advised to keep their homes sanitary; the disinfection of houses was ordered twice a day, once in the morning and once in the evening for some time at the height of the epidemic. They were further instructed to observe the rules of hygiene.

2. Orders were issued to the people to the effect that pigs, dogs, and chickens must not be allowed to ramble around, otherwise the Constabulary soldiers, of their own accord, would dispose of the animals.

3. Inasmuch as the two surface-wells of the *barrio* were found by the undersigned to be utterly unsatisfactory and their water was therefore unfit for drinking as well as for washing purposes because of marked pollution, they were therefore thoroughly treated with potassium permanganate and their use was prohibited. The people were obliged to get their water from the river whose condition was then comparatively better. They were instructed to use boiled water for drinking as well as for washing purposes. Such was considered the only immediate remedy for the water-supply.

4. Surface-waste disposal was undoubtedly an insanitary system. To remedy this condition, two public closets were constructed without loss of time at different spots, and the people were obliged to utilize them instead of the former system. These closets were duly visited twice a day by a sanitary inspector who supervised their disinfection so as to be sure that they were always fly-proof and consistently sanitary.

5. Garbage-disposal was duly improved by ordering the people not to throw their garbage at random around the house, but to collect such in a covered container and later to be buried somewhere in the house yard.

6. The improvement of the garbage-disposal incidentally reduced the menace of flies in the locality, as they used to breed on refuse. In the disinfection of houses, the ground was included with the end in view of killing the germs that might be harboring in it and the fleas which lived on it.

7. The hospital and health station houses, altho not ideal in a town, for a small *barrio* could serve the purpose. The essential deficiencies of the hospital were remedied on the arrival of the medical supplies and equipment necessary for cholera

treatment. It became, therefore, a much better hospital and was worthier of the name.

#### EPIDEMIOLOGICAL STUDY OF THE CHOLERA EPIDEMIC IN THE BARRIO OF AGSALIN

From the outbreak of the recent cholera epidemic in the *barrio* of Agsalin, Mindoro, December 20, 1926, up to the time when it was practically checked by January 10, 1926, there had been reported fifty-four cases. These were confirmed only thru clinical symptoms, as there were no laboratory facilities. The epidemiological study was limited within the boundaries of the *barrio* of Agsalin, and therefore the cases that occurred in the neighboring *barrios* and in the town of Pinamalayan were not included, although a clue for their occurrence had been duly investigated. In the *barrio* of Maragooc in the north, there were thirteen cases registered, two of which were recoveries. In the *barrio* of Bansud in the south, there were on record nine cases and no recovery; and in the town of Pinamalayan itself, there were nineteen cases reported, two of which were recoveries. The occurrence of cases in these places pointed out the *barrio* of Agsalin as the original hotbed.

#### INCIDENCE JUST BEFORE THE OCCURRENCE OF EARLY CASES

On December 15, 1925, a party from Ciburayan, Romblon, came to Agsalin in a sailboat. For their subsistence in the journey, they brought along some rice and raw fish preserved in vinegar with pepper. On their arrival at Agsalin, a native of the place met them in their boat as they were acquainted with each other; and that man happened to be working in a place near the shore where they anchored. He joined the party, and ate some food they had brought from Romblon. After leaving their *banca*, some members of the party lodged a house owned by a certain Emilio Madula and situated near the shore. They stayed there for some time. The other members of the party left for a homestead to visit a relative. After three days' sojourn in the *barrio* of Agsalin, the party left on December 18, 1925, for some place that could not be identified even after a thorough investigation. Pains were taken to get the identity of these persons; but those well acquainted with them died of cholera, and none was left to furnish necessary information. The members of the household with whom they stayed were thoroughly asked, and yet none could know those travellers beyond their identity as people from Romblon.

Two days later, December 20, 1925, after the Romblon people had left Aagsalin, the native who had met and eaten with them in the *banca* was taken sick with cholera. In the house on a farm at some distance from the *barrio*, there was reported a cholera case on December 23, 1925; but it was brought out thru questioning a neighbor that the person concerned had recently come from the *barrio* to get supplies. In the house where some of the Romblon people sojourned, there developed later three cholera cases.

The foregoing account of the incident prior to the outbreak of the cholera epidemic was furnished by the relatives and friends of the deceased and by those who happened to witness the coming of the Romblon people in a *banca* with their belongings.

#### CHARACTER OF THE CHOLERA EPIDEMIC

The cholera epidemic in the *barrio* of Aagsalin was rather violent. Soon after the appearance of the first cases, there developed day after day cholera cases of increasing intensity, so that on January 1, 1926, the maximum number reached seven cases in all. In the early part of the epidemic, persons happened to be taken sick with cholera died after a short time, and markedly few escaped death. This high mortality was in all probability due to the marked virulence of the causative organisms, the lack of immunity and resistance of the persons affected as none of them was vaccinated, and the lack of medical attendance and hospitalization.

#### DATA ON CHOLERA CASES

The method of securing data on cholera cases was simple altho painstaking. The inquiries were made either directly to the patient; or, if the patient was too ill to speak, to the person taking care and having a really close association with the sick; or, in case of death, to the relative or friend who could give a trustworthy account of what happened. The questioning was based on the following cholera investigation form:

P.H.S. FORM No .....

#### PHILIPPINE HEALTH SERVICE DIVISION OF COMMUNICABLE DISEASES CHOLERA INVESTIGATION CARD

Tentative diagnosis .....  
Case No. ....; Town .....; Barrio .....  
Patient's name .....; Age .....; Sex .....

Sec. ....; Race .....; Occupation .....; Where working .....; Are any household members engaged in handling food? Yes.....; No. If yes, give name and place of business .....; Date of first symptoms or onset .....; Date reported .....; Attending physician .....; Address when taken sick .....; Present address .....  
 Length of residence where taken sick ..... If 5 days or less, where was previous residence .....; visits within preceeding 5 days, where; give places and date .....; (Give allowance of 7 days.) School attended by patient.....; Name .....; Water foods, drinks, etc., 5 to 6 days preceding illness: Water supply; Solely .....; principal .....; Occasionally. If artesian, give source .....; Water-carrier, who .....; Milk: Kind .....; Principal source .....; Other source .....; How used: Raw, boiled, or otherwise sterilized .....; Name of dealer .....; Cheese (native) .....; Shell fish; Kind .....; Source .....; Water bottled or soft drinks: Used: Yes or No. Name of Factory .....; Groceries: Source .....; Vegetables: Kind .....; raw .....; Where secured .....; Fruits eaten: Kind .....; Where secured .....; Dinners, parties, socials, picnics, recreation-parks, etc., attended 5 days preceding illness ..... Give particulars.....

Meals: At home: Solely .....; Principally .....; Occasionally .....; At restaurant: Solely .....; Principally .....; Occasionally .....°; Where .....; At hotel: Solely .....; Principally .....; Occasionally .....; Where .....  
 Particular kind of food or eatables taken in previous 24 to 36 hours .....

### Contacts

Number of contacts.....; Immunized: Yes; No.  
 Circumstances of known or probable association with any known previous case or carrier .....

History of gall bladder symptoms, dysentery, cholera, stomach trouble or diarrhea among members of household or associates, or at boarding-place, etc., including servants, visitors, etc., .....  
 (Give particulars under remarks.)

### Environment

Neighborhood: Population—Very dense, dense, fairly dense; Space. General sanitary conditions—Very good, good, fair, poor.



Premises or house: Tenement, private; Boarding: Hotel. Excreta disposal:  
 Septic-tank, Antipolo system, pit or surface. If pit or Antipolo system,  
 give distance from well in feet .....  
 Well on premises: Yes or No. If yes, give distance from kitchen .....  
 Flies about kitchen and eating place: Abundant, moderate, Few. Are  
 they excluded from sick-room? .....

### *Prophylaxis*

Is visiting restricted or prohibited? ..... Is isolation efficient or defi-  
 cient? .....  
 Are all possible precautions being taken against the spread of infection,  
 such as disinfection of stools, urine, bedding, dishes, hands of nurses,  
 and contacts? .....  
 Was patient removed to hospital? Yes or No. If yes, give date of re-  
 moval, and name of hospital .....  
 DIAGNOSIS: (Final) ..... By whom? Dr. ....  
 Confirmed by Health Officer .....  
 Examination of discharges: Feces—  
 Positive or Negative.  
 Type of diseases .....; Termination .....  
 Has patient ever been immunized against this disease? Yes or No. If  
 so, give number of times and doses .....; Anti-typhoid .....;  
 Date .....; Anti-cholera .....; Date .....;  
 Mixed .....; Date .....; Make of vaccine.....

### *Remarks*

### *Probable Source of Infection*

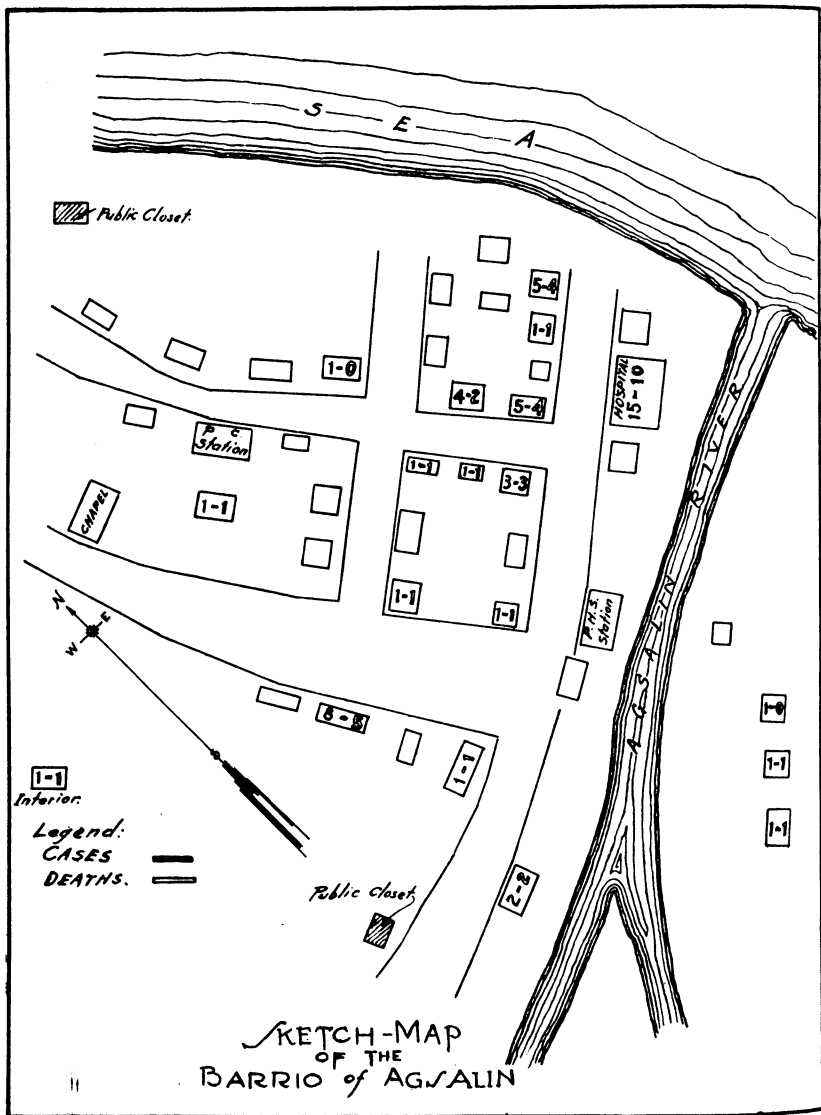
Information given by .....  
 Investigated by .....  
 Date .....

### PARTICULARS ABOUT THE CHOLERA EPIDEMIC

1. *Distribution of cases.*—It is interesting to note the dis-  
 tribution of cases in the barrio. The cases occurred in spots;  
 that is, some houses registered cases while others did not.  
 In some houses, there developed single cases; while in others  
 there developed two or three or more cases. To furnish a  
 bird's-eye view of the distribution of cases in the barrio of  
 Aagsalin, a sketch-map is hereby presented on which cases and

deaths are dotted down with the corresponding explanatory remarks:

### SKETCH-MAP OF THE BARRIO OF AGSALIN



2. *Tabulated records and deductions.*—From the first case on December 20, 1925, up to the last case on January 10, 1926, a tabulated record of cases and deaths on each day, sex and age-group considered, is presented in the following pages.









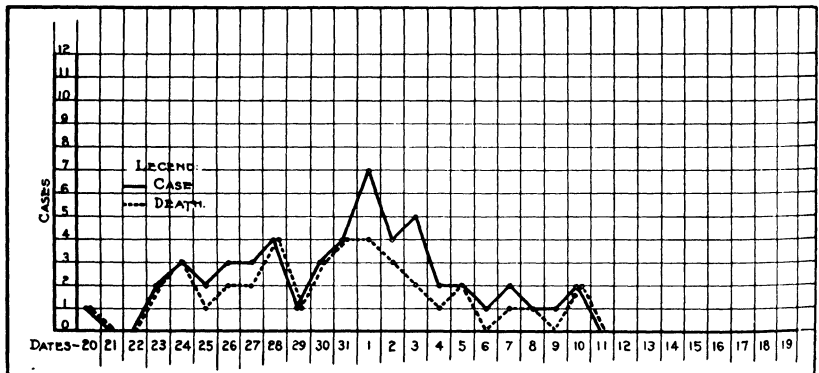


After considering the foregoing table, it becomes of interest to know what particular occupation is most affected and the incidence in language groups, as there is no other nationality but the Filipino.

A table to show this variation is as follows:

Tribes	Farmers	Fisher- men	Laborers	House- keepers	Emple- yees	None	Tribe total
Visayan.....	13	2	1	16	.....	16	48
Tagalogs.....	2	0	0	3	1	0	6
Others.....	0	0	0	0	0	0	0
Occupation total.....	15	2	1	19	1	16	54

With the end in view to see a clear-cut course of the cholera epidemic as to cases and deaths each day, the undersigned hereby presents two graphic curves on the following page.



From the foregoing tables we can, therefore, deduce the following points to give us a more thorough understanding of the situation:

(a) *Reported cases in the barrio of Aagsalin.*—In the barrio of Aagsalin alone, the total number of cases reported during the 22-day period and upon which this epidemiological study is based reached 54 cases. Out of this number, 40 were cases of death and 14 of recovery; or 74.07 per cent of death and 25.93 per cent of recovery.

(b) *Incidence by sex.*—Considering the number of males and females who succumbed to the disease, we can saw nothing except that they were equally affected. Neither sex was



markedly more affected than the other so that a reasonable cause might be searched for such an occurrence. As has been shown in the foregoing table, while there were 27 males, there were also 27 females who succumbed to the disease. Out of 27 males, there were 20 deaths with the remaining seven cases as recoveries; and likewise out of 27 females, there were also 20 deaths with seven recoveries. In the last analysis, this condition was, therefore, a rare instance of an equal number of male and female cases.

(c) *Incidence by age.*—The three age-groups that rank the most in cases are: First, 26 to 30; secondly, 1 to 4; and thirdly, 16 to 20. The two age-groups that rank the least are 56 to 50 and 66 to 70. In order to comprehend the relative percentages of cases in age-groups, a table is hereby presented:

Age-group	Cases	Percentages
26 to 30 years.....	9	16.67
1 to 4 years.....	8	14.82
16 to 20 years.....	7	12.96
5 to 10 years.....	7	12.96
21 to 25 years.....	6	11.11
11 to 15 years.....	5	9.26
36 to 40 years.....	3	5.56
41 to 45 years.....	3	5.56
31 to 35 years.....	2	3.70
46 to 50 years.....	2	3.70
56 to 60 year.....	1	1.85
66 to 70 years.....	1	1.85

In considering the foregoing table, it is apparent that patients from 1 to 70 years of age were not saved from contracting cholera. While the cases occurred considerably in the ages of 1 to 50, they diminished in the ages of 56 to 70.

(d) *Incidence by occupation.*—As has been noted, there were only two occupations predominant in the barrio. The males were nearly all farmers and the females house-keepers. The people, mostly homesteaders, were engaged in planting abacá and coconuts. The fishing industry as an occupation was being carried only in a very limited way. Some people were fishing only for meeting the little barrio needs. One employee is on record, and this was the policeman, who, in the performance of his duty, was taken sick but recovered. Under the classification "None," as shown in the table for occupations, are considered those children and old people who, because of their weak physical constitution, could not work regularly. Out of

54 cases, the following percentages of occupation are hereby considered:

	Per cent
Housekeepers .....	35.85
Farmers .....	28.30
None .....	28.20
Fishermen .....	3.77
Laborer .....	1.89
Employee .....	1.89

(e) *Mortality*.—Considering 54 as the total number of cases reported during the 22-day period and 40 as the total number of deaths, we get 74.07 per cent for mortality. The records of death during the years 1923, 1924, and 1925, prior to the epidemic in the barrio of Agsalin alone as recorded in the secretary's office in the town of Pinamalayan, are as follows:

1923—2 deaths: one pulmonary tuberculosis and one malaria.

1924—2 deaths: one child-birth and one malaria.

1925—4 deaths: one child-birth, one malaria, one chronic nephritis, and one accidental drowning.

From the foregoing records, it is evident that mortality in the barrio of Agsalin was very markedly increased during the epidemic from a yearly average of about 3 deaths to 40 deaths for every 22-day period.

3. *Water-supply*.—The barrio of Agsalin was being supplied, as described elsewhere, with water from two primitive wells and from the river. The water from the wells and river had not been analyzed for the degree of pollution or the presence of cholera vibrios, because of the lack of laboratory facilities in the locality. From the sanitary point of view, the river-water was better than the well-water. While on inspection the river was found to be comparatively clearer, the well-water was found to be turbid and muddy from surface pollution. Of the 54 cases in the barrio, 14 gave the history of having used the well-water within five days prior to their illness, and 40 had used the river-water. Those cases that had utilized the well-water were mostly the early cases; as, following the condemnation of the two wells through their disinfection with potassium permanganate, the people at large had to get water from the river.

4. *Food-stuffs*.—To understand matters better, a comparative study of the kinds of food taken 24 to 36 hours prior to the onset of illness, a special table is hereby presented with the mention of every possible means to bring out that end in view.

Food-stuffs eaten 24 to 36 hours prior to illness	Number	Percentage	Graphic representation
			0 5 10 15 20 25 30 35 40
Fish.....	17	32.08	
Meat:	5	7.54	
Chicken.....	1		
Beef ( <i>tápá</i> ).....	4		
Vegetables:	6	11.32	
Buri sprouts.....	2		
Mongó.....	1		
Green papaya.....	2		
Gabe leaves.....	1		
Milk:	4	7.54	
Canned.....	4		
Fresh.....	0		
Canned food:	3	5.67	
Sardines.....	3		
Others.....	0		
Salt (only).....	19	35.85	

It is evident from the foregoing table that, if any food-stuffs were worth considering in the epidemic, they were the fish and salt, inasmuch as many of the cases gave the history of having taken these foods with rice. The rest of the foods, such as meat, vegetables, milk, and canned goods, were of minor importance, as comparatively few patients had taken these substances for food.

One case gave the history of having eaten raw fish preserved in vinegar with black pepper (*bagóong*). The rest had the fish either roasted or boiled with vinegar or salt. A good many cases had only salt with rice for their nourishment; it was because of the fact that they were either utterly poor and did not have any means wherewith to satisfy their desire for better meals, or because there was nothing that could be bought in the barrio at the time. While fish, when not properly prepared, could serve as a good medium by which cholera vibrios could be taken into the system, salt was not so. Why many people were taken sick after taking rice and salt for their meals for sometime could be explained by the fact that they were insanitary in their mode of eating and the food became infected before ingestion. Furthermore, they were in general very careless in taking care of their sick; so that on eating with their contaminated hands, no matter how simple the food might be, they were thus very probably infected. This carelessness is accounted for by the fact that they were not well trained in the ways and means of preventing disease.

5. *Cholera vaccine as a Preventive Medicine*.—Of the 54 cases on record in the barrio of Aagsalin alone, there were 14 or 26.41

per cent vaccinated with pure cholera vaccine only once. Regarding the period elapsing from the time of injection to the onset of illness and regarding recoveries and deaths, a table is hereby presented:

Items	Period from vaccination to onset of illness											Total	Per cent
	1 day	2 days	3 days	4 days	5 days	6 days	7 days	8 days	9 days	10 days	11 days		
Recovery.....	2	1	.....	1	.....	.....	1	2	1	1	.....	9	64.29
Death.....	.....	1	1	.....	3	.....	.....	.....	.....	.....	.....	5	35.71
Total.....	2	2	1	1	3	.....	1	2	1	1	.....	14	100.00

From the foregoing table, we derive the following conclusions:

1. That of the patients injected with cholera vaccine, there were comparatively markedly more recoveries (64.29% than deaths (35.71%)

2. That from the day of the injection of cholera vaccine up to the tenth day and no longer than this period, some of those vaccinated could yet developed the disease.

3. That those vaccinated cases that died had had the injections at most five days prior to the onset of symptoms.

4. That none of those vaccinated developed the disease after the lapse of 10 days.

5. That none of those vaccinated twice or thrice developed the disease.

6. That one injection of vaccine furnished some immunity against cholera, altho it was apparently less than after the second and the third injections.

7. That sufficient immunity seemed to develop sometime after the vaccine injection.

To include in the record the non-vaccinated cases (39 or 73.59% with regard to recoveries, deaths, and percentages therefor, a table is also hereby presented:

Items	Non-vaccinated cases	Percentages
Recovery.....	5	12.82
Death.....	34	87.18
Total.....	39	100.00

A comparative study of the foregoing two tables shows that, while in the vaccinated cases there were 64.29 per cent of recoveries, in the non-vaccinated group there were only 12.82 per cent; and so, while in the vaccinated cases there were 35.71

per cent of deaths, in the non-vaccinated there were 87.18 per cent. It, therefore, goes on record from the evidences thus presented that the cholera vaccine is of a real prophylactic value and is a genuine preventive medicine against cholera,—more so, if it is given in due time and in the required series.

6. *Sources of Infection.*—It is worthy to note that there were 16 cases in all that were either primary or gave no history of contact with cholera patients, while there were 38 in all that had had contact or association with previous cholera cases. Four primary cases gave the history of association or social reunion with the Romblon people; the rest developed successively in their respective homes, nearly all of whom were found to be not far from the homes of the former cholera patients.

It is obvious that contact-infection played a great rôle in the spread of the disease; such an outcome was undoubtedly due to the very careless handling of the patients—of their excreta and vomitus—to the insanitary mode of eating, and to improper, most likely contaminated, food. These findings were brought about at first by close observation of the persons who were taking care of patients and who therefore were given due instructions by the undersigned on the rules of sanitation and the prevention of disease.

One of the first cases gave the history of having had a share in the food of the Romblon people five days prior to illness, and two early cases had been with those people in one house. When these incidence are duly considered and when we remember that the newcomers had been from a place stricken with cholera, the external origin of the epidemic in the *barrio* of Aagsalin becomes apparent. The other primary cases, developing successively in their respective homes not far from the houses of previous cholera cases, had in all probability been brought about by means of distant transmission, as by flies and the like, or by actual visits to the patients prior to the enforcement of sanitary regulations in the locality.

#### SUMMARY

After the perusal of the foregoing considerations, we can summarize our findings as follows:

1. There were 54 cases reported in the *barrio* of Aagsalin alone during the 22-day period.
2. The males and females were equally affected; that is, equal numbers of both sexes succumbed to the disease.

3. The three age-groups that ranked the most in the number of cases were: 26 to 30; 1 to 4; and 16 to 20, respectively. The two age-groups that ranked the least were: 56 to 60 and 66 to 70, respectively.

4. Among those who succumbed to the disease, housekeepers ranked the most, and then came the farmers.

5. There are on record 74.07 per cent for mortality, based on 40 deaths out of 54 cases.

6. The unboiled water for drinking and for washing purposes had also to answer for the marked spread of the disease, inasmuch as in all probability it was contaminated either at its source or at home thru careless handling. Because of lack of laboratory aid and the great distance of the place from the source of the water-supply the source has not been examined for the presence of cholera vibrios.

7. There was no particular kind of food in the *barrio* itself worthy of suspicion as a cause of the epidemic, except that brought by the Romblon people. The predominant food previously eaten by patients, if we consider of course the incubation period for cholera vibrios, consisted of rice and salt. The people, because they were poor and because there was no variety of food in the *barrio*, were contented with such markedly simple food. Such food, unless contaminated after preparation by cholera carriers in handling, by flies, by the use of dirty utensils, was not very agreeable for the cholera vibrios to grow in and multiply and therefore could not be necessarily responsible for the origin of the epidemic.

8. Excreta and garbage disposal was far from satisfactory; and, in many instances, it was a good medium for the flies to alight on and get the infecting organisms, to be later transmitted to the food of the people. That flies played at part in the spread of the disease became evident when the abundance of flies in each house, that had been seen alighting on the food of the dwellers, was duly considered.

9. The cholera vaccine once more was found and proved to be a real prophylactic and a genuine preventive medicine against cholera.

10. The cholera epidemic in the *barrio* of Agsalin was imported, so to speak, from Romblon. The coming of the Romblon people and the association the early cases had with them were of paramount significance. Once cholera had gained a footing in the locality, contact-infection and distant transmission played a great rôle in the spread of the disease.

## RECOMMENDATIONS

To make the *barrio* of Aagsalin a sanitary and ideal village and possibly to free it from any further outbreak of cholera, the following recommendations are hereby presented:

1. There must be an artesian-well from which the people can get water for drinking and washing purposes. The present water-supply, consisting of two surface-wells and the river, are very unsatisfactory, inasmuch as, besides being far from the *barrio*, their water is readily contaminated and often polluted.
2. Each house must have an Antipolo closet system. This change is necessary so as to remedy the present condition of surface excreta-disposal which must be condemned, as it is unaesthetic as well as very insanitary.
3. Garbage must be collected in a proper receptacle in each house, and must be properly disposed of into an especially dug well where it can be burned or treated otherwise. This method will remedy the insanitary condition of garbage disposal anywhere in the yard.
4. Animals, such as pigs, dogs, and chickens, should not be allowed to ramble in the *barrio*, as besides being destructive at times to neighbor's property, they readily serve as a means of transmission of pathogenic germs from one place to another.
5. The streets, yards, and houses must be kept clean by the dwellers themselves. They should be obliged to do so, as the order is for their own good.
6. Mosquito breeding-places must be destroyed or filled. If it is possible, empty the places; or if it is not, put crude oil on the water. In this connection, the people should be instructed to sleep under mosquito-nets.
7. Instructive public lectures and talks on hygiene and sanitation should be given from time to time by the health officer in charge. The object is to educate the people in hygiene and sanitation. This recommendation is made as the people have been found to be ignorant of the care and preservation of health.
8. The *barrio* public school is a blessing to the place, for the illiterate children are thereby enabled to turn a new leaf in life and not follow the trail of their elders.

## GENERAL CONCLUSIONS

The anti-cholera campaign of 1926 in Mindoro, shouldered by Insular as well as provincial health workers, was a complete success, in that it stamped out the cholera epidemic.

The preventive work was carried out in full at the earliest possible opportunity; and, undoubtedly, such promptness save many persons from the disease and possible death.

While the preventive work was successful in its aim and purpose, the curative work was no less successful. Altho the work was handicapped, as by deficient hospitalization and treatment because of the lack of facilities in such a poor locality, yet the measures enforced relieved many more patients and helped them enjoy life anew.

The *barrio* of Agsalin, after a sanitary survey, was found to be far from satisfactory. It was dirty. Pigs, dogs, and chickens were at large; excreta and garbage were being disposed of anywhere; the water used for drinking as well as for washing purposes was poor. The *modus vivendi* of the people was insanitary and unhygienic.

The cholera epidemic in Mindoro first broke out in the little *barrio* of Agsalin within the jurisdiction of the town of Pina-malayan, later encroaching into the neighboring *barrios* of Bansud and Maragooc and into the town itself. It was violent in character,—several cases occurring at one time with a high mortality rate. It was discovered to have been of external origin, coming from Romblon. The ignorance of the people and the insanitary condition of houses and their proximity to one another, the careless garbage and excreta-disposal, the abundance of flies and other possible germs-carriers,—all in all were responsible for the spread of the disease.

#### CLOSING REMARKS

After Mindoro had been freed from cholera epidemic, the undersigned, thru the order of the Director of Health, left the town of Pola for Manila at 12 noon, Friday, February 5, 1926, along with the seven Insular vaccinators. The party stopped at the town of Calapan overnight; and the undersigned conferred with the district health officer, on whose request three Insular vaccinators were left to be temporarily under his direct command. The rest of the party reached Manila at 3 p. m. on Saturday, February 6, 1926, tired out, but happy over the thought of having taken part in that noble mission—the protection and preservation of health where ignorance seemed to be blist.



## THE NEW SCHOOL OF PUBLIC HEALTH

Address of Acting President JORGE BOCOBO  
*University of the Philippines*

Mr. CHAIRMAN AND FRIENDS:

The inauguration of the School of Sanitation and Public Health is highly significant in more ways than one. It is one of those events which pass unheralded and all but unnoticed—and yet they tap unknown and perennial springs of service that enrich the community life and enhance the common weal.

For who can gainsay the untold usefulness of a system of preventing diseases which enlists various branches of science?

Among the things to be studied in this course will be the causes of epidemics, effective methods of immunization, sanitary bacteriology, industrial hygiene, sanitary engineering, child and material hygiene, and tropical medicine. These topics touch the foundations of public health and affect the very life of our race. Then tuberculosis causes nearly 30,000 deaths a year, malaria nearly 27,000, dysentery nearly 9,000, influenza nearly 7,000, and when our infant mortality is one of the highest in the world, being 162 per 1,000 births it is but the part of wise statemanship to train health officers on how to cope with the situation on the basis of the latest scientific researches.

Hence, we can not but feel gratified at the progressiveness of our Legislature in providing an initial sum for the establishment of the School of Sanitation and Public Health. I wonder if we are not sometimes unduly severe in criticizing the Legislature for failing to grant the appropriation which we request. It seems to me that more often than not, it is just a question of presenting the case persuasively. In the present instance, our lawmakers realized the necessity of scientifically prepared health officers. In setting aside the amount for the foundation of this school, our Legislature showed itself more up-to-date than most legislatures in America, where very few states have schools of this kind.

In placing the School of Sanitation under the University of the Philippines, the Legislature likewise understood the func-

tion of a State University of serving the practical needs of the common wealth. The ideal State is that whose campus is as wide as the state or the nation. Thus, while pushing forward scientific research, the State institution turns its investigations into channels of usefulness to the people at large. By the same token, research not only widens the perspective of human knowledge, but gives Science a far-reaching social mission.

It is also a happy fact that in the maintenance of the School of Sanitation, there is going to be an effective coöperation between the University of the Philippines and the Health Service. We ought always to strive for coördination between the functions of the University and the activities of the various branches of the Government. It is but human, of course, for every public servant to pursue his own plans independently, but this is the sort of thing that crushes the public service under the wheels of inertia, duplication, and delay.

To conclude: only the veriest beginnings are being set up toward a great School of Sanitation. But the foundation of this institution consecrated to human well-being bespeaks a far-seeing appraisal of social wants. Of this school it may be said as in the Holy Writ, "Through wisdom is an house builded; and by understanding it is established."

## **FULL TEXT OF LAST ANNUAL REPORT OF LATE GOVERNOR WOOD**

### **PUBLIC HEALTH**

While public health conditions have steadily improved during recent years and the Islands have been kept practically free from problem of improving public health conditions remains one of the most difficult tasks which confronts the Government of the Philippine Islands. The difficulties of the problem will be better understood when it is remembered that we have 12,000,000 people scattered among the several thousand islands of the Archipelago; that they speak 87 different dialects; that the means of communication are limited and funds still more so; that there are few doctors and few nurses; that there are large areas without drug stores, and only such medicines can be secured as are distributed through the schools and the Philippine Health Service. The fact must also be borne in mind that the people for generations have lived under conditions of indifference toward sanitary matters and they are still uninformed on this all-important subject. Furthermore, local officials are too often ignorant of the importance of sanitary measures and indifferent to the carrying out of the same. For the year 1926, statistical returns available indicate a slight increase in the death-rate. This apparent increase is undoubtedly due chiefly to the fact that greater effort was made to obtain records of all deaths, a matter attended with obvious difficulties especially in remote parts of these Islands; partly to an increase in the prevalence of certain communicable diseases.

### **ANTI-LEPROSY WORK**

The results being attained in the treatment of lepers continue to be most encouraging. During the year 114 more lepers were given their final discharge as cured and 219 who had become negative were paroled, 217 others became negative and are awaiting parole. In the Culion Leper Colony there are 5,000 lepers.

## MALARIA

Malaria is the most disabling disease in the Philippine Islands. It does not kill its numerous victims quickly but incapacitates them for work. A large percentage of children in the schools of malarious districts are lowered in their power of application and grow up to be dull and ignorant people. With the facts now at hand it seems possible to control malaria or to reduce its prevalence greatly through destroying the malaria carrying mosquitoes in their larval stages. For the year 1927 a fund of ₱100,000 was made available to continue demonstration work throughout the Islands. This fund will be expended chiefly for instruction and supervision; the localities benefitted will furnish labor and materials. It is reported that during the year there were 20,640 deaths from malaria. This number is, of course, far beyond the actual number of people who died of malaria. Deaths from other febrile conditions are called malaria due to lack of knowledge and of diagnostic methods.

## HOSPITALS

During the year two more provincial hospitals were constructed under the provisions of Act 3114 as amended by Act 3168. There are now in actual operation six hospitals constructed under this Act, having a total bed capacity of 181. Mission hospitals are continuing to do good work. There is no more laudable method by which those who contribute to missions may have their money spent through the construction and maintenance of hospitals in districts where the people are too poor to build and maintain their own. Especially needy in this regard is the great northeastern section of the Island of Luzon and the eastern coast of Samar. A fine new 50 bed Mission Hospital was completed in Cagayan, Misamis, during the year. The total bed capacity of all hospitals in the Islands is now 5,616, 3,726 of which are in hospitals located in and near Manila.

## MISCELLANEOUS

---

### ABRA

An intensive campaign for the eradication of dysentery was conducted, and an emergency hospital has been opened for this purpose. In this connection, vaccination against dysentery was performed. Physical examination of school children was also made in the First Sanitary Division.

### AGUSAN

In Butuan a new stream was put under control during the month, thus making a total of 13 streams now under malaria control in this district.

The district health officer examined school children in Tubay, Sanghan, Magallanes, Masao, Carmen, and Buenavista. Lectures urging the co-operation of the public for the solution of public health problem were delivered.

### CATANDUANES

Neosalvarsan injections were given to yaws patients in Catanduanes.

Five hundred and sixty-two Antipolo closets were made in the different municipalities. The model dispensary in Virac is about to be completed. Likewise, a piece of land has been purchased for the site of proposed dispensary building in Tabaco. A new modern market has just been completed in Bacacay.

### BATAAN

The district health officer has given a lecture before the high-school students on the occasion of their convocation program. Much stress was made on the importance of hygiene and sanitation.

Through adoption of adequate measures the district is now practically free from dysentery. Dysentery vaccinations were performed in compliance with Circular No. 195.

### BATANGAS

The principal activities of this office during the month were: Sanitary inspection in the *barrios* for children cases of dysentery and other communicable diseases; general disinfection of public markets, public and private closets and houses, where cases of contagious diseases have occurred. One hundred and twenty-two Antipolo closets were constructed in 12 municipalities; 7 injections were given against cholera, typhoid, and mixed vaccines; 38 buildings were inspected and school children were physically examined by sanitary presidents and nurses.

**CAGAYAN**

All personnel of this district was very busy pushing on vaccination work against typhoid and cholera.

**COTABATO**

The district health officer has conferred with the provincial authorities asking the early construction of the proposed sick ward in Pilit. The cost of construction is estimated to cost ₱2,124.

**LA UNION**

In a house-to-house inspection made by the district health officer, dysentery cases were discovered. The people were urged to bring their patients to the Emergency Hospital which was open about the middle of the month. At first the people did not realize the importance of hospitalization, but upon explanation of its great advantages, patients began to arrive.

**LANAO**

The following were accomplished during the month: Yaws campaign at Malabang; the construction of an emergency hospital at Iligan has just been started; the construction of the septic tank of the Lanao Public Hospital.

**MASBATE**

The district health officer conducted a campaign against dysentery in Magdalena, Uson, Armenia and Dimasalang.

**MISAMIS**

An intensive campaign was conducted in the municipalities where cases of measles, influenza, and gastro-enteritis are registered. Anti-leprotic treatment was given to all lepers now detained in Macabalan.

**NUEVA ECIJA**

The site of a new incinerator will be located in the barrio of San Josep, Cabanatuan, Nueva Ecija, which was donated by Don Jose de Leon.

Malaria survey was resumed by Dr. C. Manalang who was assisted by the personnel of this office. Paris green was used for this purpose.

**NUEVA VIZCAYA**

In Bayombong, an ordinance was passed, requiring all food vendors, handlers, and manufacturers to possess health certificates before they are permitted to engage in their trades.

Also an ordinance requiring all private physicians, within the jurisdiction of the town to report to the district health officer within 12 hours following the discovery of any case of communicable disease.

Due to the appearance of dysentery in Boyombong and Solano, all suspicious cases were ordered to be brought to the hospital for treatment. Disinfection of all closets and stools were made. Anti-cholera and typhoid vaccinations were also performed.

**ROMBLON**

The **Municipal Council** of Romblon had set aside a certain amount for the construction of an additional wing to the public dispensary at Romblon, Romblon, and for the purchase of equipments for a venereal disease clinic.

**MALARIA BOARD STARTS FIGHT**

An intensive campaign against malaria will be launched in the Cagayan Valley including the Province of Nueva Vizcaya, and in the Ilocos provinces, in Nueva Ecija, Pangasinan, and Tarlac, under the supervision of the regular personnel of the Philippine Health Service. For units are conducting the malaria fight, three of them doing field work, and the other doing test work.





## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of August, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1927<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	294,137
Spaniards.....	1,955
Other Europeans.....	1,128
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I. MEISIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,538</b>
<b>No. II. SAMPALOC:</b>	
4. Santa Cruz.....	52,238
5. Quiapo.....	15,862
6. San Miguel.....	4,434
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,232</b>
<b>No. III. PACO:</b>	
8. Port Area.....	4,816
9. Intramuros.....	14,625
10. Ermita.....	16,139
11. Malate.....	16,471
12. Paco.....	16,037
13. Pandacan.....	5,861
14. Santa Ana.....	6,675
<b>Total.....</b>	<b>80,624</b>
<b>Grand total.....</b>	<b>320,394</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, AUGUST, 1927**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	
1-10. ....	756.94	26.1	31.9	4	21.8	10	29.4	29.3
11-20. ....	56.61	26.5	31.3	11,14	22.6	11,13	29.0	29.1
21-31. ....	56.41	26.8	32.5	22	23.0	21	29.2	29.3

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10. ....	86.6	93.1	8	81.3	10
11-20. ....	84.9	89.4	19	79.5	11
21-31. ....	85.7	90.2	27	81.0	21

Date	Prevailing direction	Wind			Atmidometer <sup>1</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10. ....	SW	2,084.5	404.5	7	18.8	3.6	1
11-20. ....	SW	3,577.5	775.5	19	25.5	4.6	13
21-31. ....	SW	2,754.0	427.0	29	29.6	6.4	22

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10. ....	32 10	9 25	1	248.5	9
11-20. ....	33 00	9 20	11	176.5	9
21-31. ....	44 25	8 25	22	162.9	10

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE  
CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans. ....	10	5	15	56.39
Filipinos. ....	781	649	1,430	57.28
Spaniards. ....	3	2	5	30.13
Other Europeans. ....	2	1	3	31.39
Chinese. ....	48	36	84	55.43
All others. ....	9	8	17	91.63
<b>Total and average. ....</b>	<b>853</b>	<b>701</b>	<b>1,554</b>	<b>57.15</b>

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I, MEISIC:							
1. Tondo.....	225	188	413	22	11	33	446
2. San Nicolas.....	79	63	142	1	3	4	146
3. Binondo.....	39	32	71	3	2	5	76
Total.....	343	283	626	26	16	42	668
No. II, SAMPALOC:							
4. Santa Cruz.....	88	87	175	2	7	9	184
5. Quiapo.....	34	24	58	1	.....	1	59
6. San Miguel.....	19	16	35	2	.....	2	37
7. Sampaloc.....	111	86	197	10	5	15	212
Total.....	252	213	465	15	12	27	492
No. III, PACO:							
8. Port Area.....	1	2	3	.....	.....	.....	8
9. Intramuros.....	37	33	70	2	2	4	74
10. Ermita.....	38	34	67	2	1	3	70
11. Malate.....	74	56	130	3	1	4	134
12. Paco.....	32	20	52	1	1	2	54
13. Pandacan.....	12	13	25	3	.....	3	28
14. Santa Ana.....	16	14	30	1	.....	1	31
Total.....	205	172	377	12	5	17	394
Grand total.....	800	668	1,468	53	33	86	1,554

Attended by physicians, living, 491; Stillbirths 30.

Attended by midwives, living, 180; Stillbirths 3.

Attended by families, living, 933; Stillbirths 20.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA

BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	4	.....	4	15.04
Filipinos.....	353	311	664	26.60
Spaniards.....	3	.....	3	18.08
Other Europeans.....	1	.....	1	10.46
Chinese.....	24	4	28	18.47
All others.....	2	.....	2	10.78
Total and average.....	387	315	702	25.81

## NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEISIC:</b>			
1. Tondo.....	132	106	238
2. San Nicolas.....	37	17	54
3. Binondo.....	14	5	19
Total.....	183	128	311
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	59	45	104
5. Quiapo.....	8	10	18
6. San Miguel.....	6	5	11
7. Sampaloc.....	50	46	96
Total.....	123	106	229
<b>No. III, PACO:</b>			
8. Port Area.....		1	1
9. Intramuros.....	11	10	21
10. Ermita.....	9	8	17
11. Malate.....	35	35	70
12. Paco.....	15	16	31
13. Pandacan.....	8	2	10
14. Santa Ana.....	3	9	12
Total.....	81	81	162
Grand total.....	387	315	702

NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF  
MANILA, TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	121	89
Divorced.....		
Widowed.....	31	61
Single.....	298	200
Conditions not stated.....	8	1
Total.....	458	351
Grand total.....	809	

Stillbirths .....	53
Number of deaths with medical attendance.....	514
Number of deaths without medical attendance.....	295

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year .....	103	91	13	6	213
1 year plus .....	46	27	5	3	81
2 years plus .....	23	23	2	1	49
3 years plus .....	9	6	2	.....	17
4 years plus .....	4	8	2	.....	14
5 to 9 years .....	11	9	.....	.....	20
10 to 14 years .....	7	4	1	.....	12
15 to 19 years .....	16	9	4	4	33
20 to 24 years .....	19	15	10	3	47
25 to 29 years .....	17	9	3	3	32
30 to 34 years .....	18	9	3	.....	30
35 to 39 years .....	12	15	4	2	33
40 to 44 years .....	10	9	3	.....	22
45 to 49 years .....	20	16	1	3	40
50 to 54 years .....	12	10	5	6	33
55 to 59 years .....	17	6	8	2	28
60 to 64 years .....	11	12	1	.....	24
65 to 69 years .....	10	8	.....	1	19
70 to 74 years .....	6	6	2	1	15
75 to 79 years .....	7	2	1	.....	10
80 to 84 years .....	4	7	.....	1	12
85 to 89 years .....	2	5	.....	.....	7
90 to 94 years .....	.....	7	.....	.....	7
95 to 99 years .....	3	2	.....	.....	5
100 years and over .....	.....	.....	.....	.....	.....
Age not stated .....	.....	.....	.....	.....	.....
Total .....	387	315	65	36	803

NOTE.—Six (6) males Filipinos ages and permanent residences unknown, are not included in the above table.



53	Chronic rheumatism, osteoarthritis, gout	11	12	2
54	Beri-beri			
55	a. Infants			
	b. Adults			
56	Rickets	11	12	23
57	Diabetes melitus	1	1	1
58	Anemia, Chlorosis:	1	2	1 1 3
	a. Pernicious anemia			
	b. Other anemias and chlorosis			1
69	Other general diseases		1	2
			1	1
70-86				
	III. Diseases of the nervous system and of the organs of special sense			
70	Encephalitis		1	1
71	Meningitis:			
	a. Simple meningitis	2	2	4
	b. Nonepidemic cerebrospinal meningitis	1	1	1
73	Other diseases of the spinal cord			
74	Cerebral hemorrhage, apoplexy:			
	a. Cerebral hemorrhage	3	2	5
75	Paralysis without specified cause:			
	a. Others under this title	1	1	2
76	General paralysis of the insane			
77	Other forms of mental alienation	7	2	9
78	Epilepsy	4		4
87-96				
	IV. Diseases of the circulatory system			
88	Endocarditis and myocarditis (acute)	5	2	7
90	Other diseases of the heart	3	8	12
97-107				
	V. Diseases of the respiratory system			
98	Diseases of the larynx	1		1
99	Bronchitis			
	a. Acute	15	6	21
	b. Chronic	2	3	5
	c. Unspecified (under 5 years of age)	2	1	3
100	Broncho-pneumonia:			
	a. Broncho-pneumonia	45	32	79
	b. Capillary bronchitis	5	4	9
101	Pneumonia:			
	a. Lobar	7	9	16
	b. Unspecified	1		1
102	Pleurisy	1	1	2
105	Asthma	1	2	3







# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....			4	3					1				8
10	a. Malarial fever.....	1		3										4
11	Diphtheria.....			1										1
16	Influenza.....													1
	b. Without pulmonary complications specified.													
	Dysentery:													
	a. Amebic.....													
	b. Bacillary.....			1	1							1		2
	c. Unspecified or due to other causes.....			1	1									2
31	Tuberculosis of the respiratory system.....			3	4									7
32	Tuberculosis of the meninges and central nervous system.....			8	3					1				12
33	Tuberculosis of the intestines and peritoneum.....			1						1				2
38	Syphilis.....			1						1				2
43-69	<i>II. General diseases not included in Class I</i>													
43	Cancer and other malignant tumors of the buccal cavity.....	1												1
44	Cancer and other malignant tumors of the stomach, liver.....			2										2
55	Beriberi:													
	a. Infants.....			1										1
57	Diabetes mellitus.....									1				1
70-86	<i>III. Diseases of the nervous system and of the organs of special sense</i>													
77	Other forms of mental alienation.....													1
84	Other diseases of the nervous system.....			1										1
87-96	<i>IV. Diseases of the circulatory system</i>													
90	Other diseases of the heart.....			2	2									4

97-107	<i>V. Diseases of the respiratory system</i>									
99	Bronchitis:									
	a. Acute.....	1							1	2
	b. Chronic.....	1							1	1
	c. Unspecified (under 5 years of age).....	1								1
100	Broncho-pneumonia:									
	a. Broncho-pneumonia.....	5							3	8
101	Pneumonia:									
	a. Lobar.....	2							2	4
108-127	<i>VI. Diseases of the digestive system</i>									
110	Diseases of the esophagus.....								1	1
113	Diarrhea and enteritis (under 2 years of age).....	7								1
114	Diarrhea and enteritis (2 years and over).....	1								7
117	Appendicitis and typhilitis.....	1								1
118	Hernia, intestinal obstruction:									
	a. Hernia.....	1							1	2
125	Diseases of the pancreas.....								1	1
128-142	<i>VII. Nonvenereal diseases of the genito-urinary system and annexa</i>									
129	Chronic nephritis (including unspecified 10 years and over).....								2	2
131	Other diseases of the kidneys and annexa.....	1								1
139	Benign tumors of the uterus.....								1	1
143-150	<i>VIII. The puerperal state</i>									
144	Puerperal hemorrhage.....								1	1
145	Other accidents of labor:									
	c. Others under this title.....								1	1
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>									
151	Gangrene.....	1								1
160-163	<i>XII. Early infancy</i>									
160	Congenital debility, icterus, and sclerema.....	2							1	3
164-	<i>XIII. Old age</i>									
164	Senility.....	2							2	4

## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

Inter-nationalist numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
165-203	<i>XIV. External causes</i>													
182	Accidental drowning . . . . .			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	c. Automobile accidents . . . . .	1												1
197	Homicide by firearms . . . . .			1										1
198	Homicide by cutting or piercing instruments . . . . .			1										1
202	Other external violence . . . . .			1										1
	Total . . . . .	3		57	36					4		1		101
	Grand total . . . . .	3		93						4		1		101

**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS  
IN THE CITY OF MANILA, DURING THE MONTH OF AUGUST, 1927 (INCLUDING TRANSIENTS)**

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month												
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 31 days		Total under 1 month		
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All Causes.....	116	97	12	12	12	13	9	4	5	3	4	1	42	33
COMMUNICABLE DISEASES														
Typhoid and paratyphoid fever (1)														
Smallpox (6)														
Measles (7)	1													
Whooping-cough (9)														
Diphtheria (10)	1													
Influenza (11)														
Asiatic cholera (14)	3													
Dysentery (16)	1													
Meningococcus meningitis (24)														
Other epidemic and endemic diseases (25)	1													
Tetanus (29)	1													
Other infectious diseases (1-42)¹	2													
Beriberi (55)	12													
Diseases of the nervous system (70; 71; 80; 85)	1													
Respiratory diseases (99; 100; 101; 107)	30													
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)	15													
Congenital malformation (159)	1													
Early infancy (160; 161; 162; 163)	42													
All other causes (43-205)¹	9													

¹ Other than specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

**INFANT MORTALITY DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS  
IN THE CITY OF MANILA, DURING THE MONTH OF AUGUST, 1927 (INCLUDING TRANSIENTS)—Continued**

[Stillbirths not included]

Causes of death	Age at death under 1 year																								Total under 1 year	
	1 month+		2 months+		3 months+		4 months+		5 months+		6 months+		7 months+		8 months+		9 months+		10 months+		11 months+					
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
All Causes.....	16	8	9	6	4	7	4	8	5	4	11	8	5	2	6	5	7	6	5	8	2	2	74	64		
COMMUNICABLE DISEASES:																										
Typhoid and paratyphoid fever (1).																										
Smallpox (6).....																										
Measles (7).....																										
Whooping-cough (9).....																										
Diphtheria (10).....																										
Influenza (11).....																										
Asiatic cholera (14).....																										
Dysentery (16).....																										
Meningococcus meningitis (24).....																										
Other epidemic and endemic diseases (25).....																										
Tetanus (29).....																										
Other infectious diseases (1-42) <sup>1</sup> .....																										
Beriberi (55).....																										
Diseases of the nervous system (70; 71; 80; 85).....																										
Respiratory diseases (99; 100; 101; 107).....																										
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....																										
Congenital malformation (159).....																										
Early infancy (160; 161; 162; 163).....																										
All other causes (43-205) <sup>1</sup> .....																										

<sup>1</sup> Other than specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	20,566
Number of rats caught by spring traps.....	2,906
Number of cage wire traps set.....	614
Number of rats caught by cage wire traps.....	22
Number and kind of baits (coconuts).....	21,767
Number of poison portions placed.....	19,348
Number of rats found poisoned.....	342
Number of rats killed by clubs and other weapons.....	961
Number of rats found dead from other causes.....	527
Total number of rats otherwise caught, found dead or killed.....	4,758
Total number of rats sent to the Laboratory for examination.....	4,758
Total number of rats found positive for plague.....	0

---

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF AUGUST, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female		Cases	Deaths	Grand total
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths			
I.	No. 1.	9	1	2	1	1	1	2	1	10	2	4	2	14	4
	No. 2.	2		1						2		1		3	
	No. 3.	5	2	2	1	1	1			6	3	2	1	8	4
II.	No. 4.	1		1						1		1		2	
	No. 5.	1								1		1		2	
	No. 6.	1								1		1		2	
	No. 7.	2	1	2		1	1			3	2	2		5	2
	No. 8.														
	No. 9.	2								2				2	
III.	No. 10.	1								1				1	
	No. 11.	2		1	1					2		1	1	3	1
	No. 12.	1	1							1	1			1	1
	No. 13.														
	No. 14.														
Grand total		26	5	9	3	3	3	2	1	29	8	11	4	40	12

**REMARKS:**

Cases confirmed as typhoid fever.....	40
Confirmed as paratyphoid fever.....	0
By autopsy.....	0
By blood culture.....	0
By Widal reaction.....	1
By urine examination.....	0
By feces examination.....	0
By clinical symptoms.....	39
Cases reported among nonresident persons not included in the table.....	22
Deaths reported among nonresident persons not included in the table.....	8

Typhoid carrier—None.





## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	20,566
Number of rats caught by spring traps.....	2,906
Number of cage wire traps set.....	614
Number of rats caught by cage wire traps.....	22
Number and kind of baits (coconuts).....	21,767
Number of poison portions placed.....	19,343
Number of rats found poisoned.....	343
Number of rats killed by clubs and other weapons.....	961
Number of rats found dead from other causes.....	527
Total number of rats otherwise caught, found dead or killed.....	4,758
Total number of rats sent to the Laboratory for examination.....	4,758
Total number of rats found positive for plague.....	0

---

DYSENTERIES REPORTED DURING THE MONTH OF AUGUST, 1927, CITY OF MANILA

451

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	No. 1.....	1	.....	.....	3	3	1	1	4	3	4	3	8	6
	No. 2.....	1	1	.....	.....	.....	1	1	.....	.....	1	1	1	2
	No. 3.....	1	1	.....	1	.....	2	2	2	1	2	2	4	4
	No. 4.....	3	3	.....	4	4	.....	.....	7	7	2	1	9	8
II.....	No. 5.....	.....	1	1	.....	.....	1	1	.....	.....	2	2	2	2
	No. 6.....	1	1	.....	.....	.....	.....	.....	1	1	.....	.....	1	1
	No. 7.....	1	.....	.....	4	4	3	3	5	4	5	3	10	7
	No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 9.....	4	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	4	.....
III.....	No. 10.....	.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....	2	2
	No. 11.....	1	1	.....	2	.....	1	.....	3	1	4	1	7	.....
	No. 12.....	1	1	.....	1	1	.....	.....	1	1	1	1	2	1
	No. 13.....	.....	.....	.....	1	.....	.....	.....	1	1	.....	.....	1	.....
	No. 14.....	.....	1	.....	.....	1	.....	.....	1	.....	1	.....	2	1
	Grand total.....	13	7	15	6	16	13	9	29	20	24	14	53	34

REMARKS:

Amoebic dysentery..... 5  
 Bacillary dysentery..... 24  
 Unspecified..... 24  
 Cases reported among nonresident persons not included in the table..... 15  
 Deaths reported among nonresident persons not included in the table..... 11

Dysentery carrier—None.

## CHOLERA REPORTED DURING THE MONTH OF AUGUST, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female			Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths			
I...																				
No. 1.....																				
No. 2.....	1												1						1	
No. 3.....																				
No. 4.....																				
No. 5.....																				
No. 6.....																				
No. 7.....																				
No. 8.....																				
No. 9.....																				
No. 10.....																				
No. 11.....				1												1			1	
No. 12.....																				
No. 13.....																				
No. 14.....																				
Grand total.....	1			1									1			1			2	

## REMARKS:

No nonresident case was reported during the month.

Cholera carrier—27



**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF AUGUST, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	16	2	1	
Varicella.....	3	2		
Varioloid.....				
Smallpox.....				
Measles.....		2		1
Whooping cough.....		1		1
Influenza.....	16	3	5	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....	1			
Tuberculosis of the respiratory organs.....	121	131	61	58
Tuberculosis of other organs.....	9	15	7	12
Beriberi, infantile.....	11	12	11	12
Beriberi, adults.....		1		1

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	40	11	4	
Varicella.....	7			
Varioloid.....				
Smallpox.....				
Measles.....	1			
Whooping cough.....				
Influenza.....		4		1
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....	2			
Tuberculosis of the respiratory organs.....	28	18	9	3
Tuberculosis of other organs.....	3		3	
Beriberi, infantile.....	1		1	
Beriberi, adults.....				

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINE  
FOR THE MONTH OF AUGUST, 1927**

Sera and vaccines	On hand August 1, 1927	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of the month
Antidiphtheric serum (units).....	770,000		770,000	200,000	570,000
Antidyenteric serum (ampoules).....	245	1,800	2,045	1,876	169
Anti-tetanic serum (units).....	900,000		900,000	450,000	450,000
Cholera vaccine (c.c.).....	9,720	72,000	81,720	75,420	6,300
Dried vaccine virus (units).....	107,500	100,000	207,500	101,200	106,300
Dysenteric vaccine (c.c.).....		49,320	49,320	47,880	1,440
Fresh vaccine virus (units).....	347,000	100,000	447,000	176,400	270,600
Gonococcus vaccine (ampoules).....		200	200	200	
Mixed typhoid-cholera vaccine (c.c.).....	41,340	150,000	191,340	147,160	44,180
Normal horse serum (ampoules).....		50	50	50	
Streptococcus vaccine (ampoules).....					
Typhoid vaccine (c.c.).....	3,720	30,000	33,720	18,000	15,720









**CONSOLIDATED REPORT OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	9,464	1,915	2,602	4,947
Agusan.....	4,835	1,297	1,403	2,135
Albay.....	45,665	8,767	9,128	27,770
Antique.....	10,987	2,823	5,046	3,118
Bataan.....	10,861	3,969	3,420	3,472
Batanes.....	2,160	170	404	1,586
Batangas.....	38,431	11,380	8,330	18,721
Bohol.....	12,092	4,064	3,292	4,736
Bukidnon.....	4,086	1,340	1,023	1,723
Bulacan.....	18,931	6,643	6,125	6,163
Cagayan.....	53,975	9,909	35,145	8,921
Camarines Norte.....	11,618	2,133	5,482	4,003
Camarines Sur.....	23,728	5,819	7,642	10,267
Capiz.....	36,133	8,321	16,246	11,566
Catanduanes.....	11,640	2,705	1,617	7,318
Cavite.....	19,173	3,784	8,756	6,633
Cebu.....	79,894	27,655	11,499	40,740
Cotabato.....	14,289	4,305	4,411	5,573
Davao.....	27,245	11,783	8,545	6,917
Ilocos Norte.....	24,444	4,939	7,310	12,195
Ilocos Sur.....	20,603	5,620	2,328	12,655
Iloilo.....	101,460	25,472	59,595	16,393
Isabela.....	28,576	7,289	14,387	6,900
Laguna.....	63,854	8,756	44,258	10,840
Lanao.....	29,743	9,547	14,732	5,464
La Union.....	19,468	3,817	248	15,403
Leyte.....	96,484	26,395	38,621	31,468
Marinduque.....	60,406	4,628	41,544	14,234
Masbate.....	18,262	3,354	9,671	5,237
Mindoro.....	3,235	802	668	1,765
Misamis.....	16,637	5,694	1,708	9,235
Mountain Province.....	29,268	7,890	16,147	5,231
Nueva Ecija.....	20,493	8,815	3,847	7,831
Nueva Vizcaya.....	3,154	1,056	466	1,632
Occidental Negros.....	81,017	29,142	34,574	17,301
Oriental Negros.....	27,006	8,565	8,047	10,394
Palawan.....	1,207	253	612	342
Pampanga.....	29,086	7,655	10,520	10,911
Pangasinan.....	41,197	14,269	6,090	20,838
Rizal.....	69,026	12,044	4,597	52,385
Romblon.....	38,325	6,495	22,264	9,566
Samar.....	65,607	12,050	29,332	24,225
Sorsogon.....	15,951	6,994	306	8,651
Sulu.....	17,818	9,923	3,062	4,833
Surigao.....	5,038	2,360	576	2,102
Tarlac.....	21,986	4,660	12,960	4,366
Tayabas.....	27,513	11,323	5,391	10,799
Zambales.....	8,839	3,128	1,871	3,840
Zamboanga.....	6,630	1,908	1,074	3,648
Total.....	1,427,540	373,625	536,922	516,993

**CONSOLIDATED REPORT OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927—Continued**

Provinces	Inspections of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive
Abra.....	755	409	1,645	1,335	1,661	2,669	4,061	4,413
Agusan.....	203	172	267	142	642	373	1,112	687
Albay.....	3,938	1,175	6,179	1,476	10,187	4,659	20,304	7,310
Antique.....	1,104	297	1,207	830	933	1,353	3,244	2,480
Bataan.....	2,105	441	2,767	1,108	2,381	947	7,253	2,496
Batanes.....	185	83	335	168	553	329	1,073	580
Batangas.....	5,478	1,445	7,960	3,179	7,971	6,441	21,409	11,065
Bohol.....	1,578	428	2,217	824	3,059	2,333	6,854	3,585
Bukidnon.....	97	103	304	357	884	1,570	1,285	2,030
Bulacan.....	5,550	1,015	3,988	1,656	3,806	2,334	13,344	5,005
Cagayan.....	3,361	649	5,830	1,342	12,542	13,019	21,733	15,010
Camarines Norte.....	1,147	225	1,859	429	3,556	1,593	6,562	2,247
Camarines Sur.....	3,520	1,190	3,572	1,233	7,557	3,940	14,649	6,363
Capiz.....	2,876	625	4,093	1,802	12,117	5,440	19,086	7,867
Catanduanes.....	795	432	902	490	953	649	2,650	1,571
Cavite.....	3,377	588	2,940	985	6,967	4,266	13,284	5,839
Cebu.....	8,224	2,579	9,508	3,209	8,981	8,398	26,713	14,186
Cotabato.....	359	283	978	937	2,953	2,569	4,290	3,789
Davao.....	764	272	2,264	894	10,169	4,368	13,197	5,534
Ilocos Norte.....	3,179	1,051	4,879	1,849	5,264	5,697	13,322	8,597
Ilocos Sur.....	2,727	884	3,889	1,603	3,644	3,742	10,260	6,229
Iloilo.....	5,886	948	12,323	3,654	27,686	25,512	45,895	30,114
Isabela.....	1,691	748	3,790	1,113	8,475	6,543	13,956	8,404
Lag na.....	3,445	752	5,186	2,435	15,012	14,711	23,643	17,898
Lanao.....	507	115	2,392	606	8,387	4,293	11,236	5,014
La Union.....	2,455	640	2,948	2,192	2,595	4,055	7,998	6,887
Leyte.....	3,624	1,094	11,665	3,261	26,209	10,247	41,498	14,602
Marinduque.....	1,175	322	3,867	1,260	21,847	10,258	26,889	11,840
Masbate.....	717	259	1,455	492	4,524	2,983	6,696	3,734
Mindoro.....	459	198	377	194	720	496	1,556	888
Misamis.....	985	392	1,565	765	2,634	1,699	5,184	2,856
Mountain Province.....	1,019	210	3,130	754	10,430	6,556	14,579	7,620
Nueva Ecija.....	3,627	1,189	5,088	2,075	3,058	2,933	11,773	6,197
Nueva Vizcaya.....	501	232	396	364	553	931	1,450	1,527
Occidental Negros.....	6,551	1,187	10,671	2,858	16,755	14,794	33,977	18,839
Oriental Negros.....	3,555	1,074	3,842	1,808	7,171	3,932	14,568	6,814
Palawan.....	38	15	117	92	288	307	443	414
Pampanga.....	2,567	703	2,024	769	4,135	4,080	8,726	5,552
Pangasinan.....	7,155	1,736	8,237	2,899	7,437	6,793	22,829	11,428
Rizal.....	4,061	1,137	5,502	2,421	13,448	20,826	23,011	24,884
Romblon.....	1,328	198	4,544	1,334	13,539	10,166	19,411	11,698
Samar.....	2,774	942	6,771	3,415	18,504	10,177	28,049	14,534
Sorsogon.....	1,776	742	3,763	1,774	4,734	2,746	10,273	5,262
Sulu.....	936	334	2,835	871	5,589	2,448	9,360	3,653
Surigao.....	640	237	946	342	1,146	515	2,732	1,094
Tarlac.....	2,052	814	3,109	1,748	4,086	6,855	9,247	9,417
Tayabas.....	3,997	715	5,769	1,300	9,629	4,502	19,395	6,517
Zambales.....	1,504	354	1,436	751	1,310	2,053	4,250	3,158
Zamboanga.....	364	509	593	1,070	794	1,716	1,751	3,295
Total.....	116,711	32,142	181,924	68,465	347,425	259,916	646,060	360,523

<sup>1</sup> Incomplete; reports from other provinces not yet received. Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	20,748	6,985		27,733
Antique.....	13,943	7,591		21,534
Bataan.....	1,948			1,948
Batangas.....	16,202	40		16,242
Bulacan.....	135,353	387		135,740
Camarines Norte.....	1,841	10		1,851
Camarines Sur.....	18,041	639		18,680
Capiz.....	13,280	5,858		19,138
Catanduanes.....	102			102
Cavite.....	336			336
Cebu.....	57			57
Ilocos Norte.....	14,644	6,717		21,361
Iloilo.....	20,970	4,888		25,858
Isabela.....	457	253		710
Laguna.....	3,520	632		4,152
Lanso.....	430	360		790
Leyte.....	15,899	3,481		19,380
Marinduque.....	502	280		782
Masbate.....	223	108		331
Nueva Ecija.....	148	57		205
Pampanga.....	45,842	5,814		51,656
Pangasinan.....	8,895	4,935		13,830
Rizal.....	43,984	7,962		51,946
Romblon.....	4,192	159		4,351
Samar.....	194	187		381
Sorsogon.....	4,330	804		5,134
Tarlac.....	5,287	863		6,150
Total.....	391,368	58,510		449,878

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Bataan.....	453	167		620
Bulacan.....	202	92		294
Laguna.....	587	187		774
La Union.....	111	36		147
Masbate.....	490	242		732
Pampanga.....	743	130		873
Rizal.....	1,186	661		1,847
Surigao.....	56	12		68
Tayabas.....	926	256		1,182
Total.....	4,754	1,783		6,537

<sup>1</sup> Anti-dysentery vaccinations practically started in the provinces on June, 1927. Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	320	266	112	698
Batangas.....	3,317	1,536	140	4,993
Bulacan.....	2,502	1,100	775	4,377
Camarines Sur.....	97	19		116
Catanduanes.....	7	6		13
Iloilo.....	1,979	933	357	3,269
Laguna.....	4,941	1,701	894	7,536
La Union.....	267	242	244	753
Mountain Province.....	117	111	111	339
Nueva Ecija.....	741	523	287	1,551
Pampanga.....	2,188	1,664	824	4,676
Pangasinan.....	2,258	1,825	1,206	5,289
Rizal.....	1,668	532	56	2,256
Samar.....	47	23		70
Sorsogon.....	115			115
Tarlac.....	721	270	20	1,011
Total.....	21,285	10,751	5,026	37,062

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	9,056	2,635		11,691
Bataan.....	1,106	729		1,835
Batangas.....	3,809	2,321		6,130
Bohol.....	3,372	2,600		5,972
Bukidnon.....	62	54		116
Bulacan.....	1,315	586		1,901
Cagayan.....	5,579	2,010		7,589
Camarines Norte.....	2,880	980		3,860
Camarines Sur.....	2,642	918		3,560
Cavite.....	44,058	42,805		86,863
Cebu.....	14,701	3,346		18,047
Cotabato.....	829			829
Davao.....	2,198	1,878		3,576
Ilocos Norte.....	2,096	1,126		3,222
Ilocos Sur.....	3,074	2,264		5,338
Iloilo.....	11,724	6,055		17,779
Isabela.....	63	56		119
Laguna.....	84	79		163
Lanao.....	4,076	1,424		5,500
La Union.....	4,709	3,007		7,716
Leyte.....	10,491	2,243		12,734
Marinduque.....	1,901	632		2,533
Masbate.....	1,694	745		2,439
Mindoro.....	9	22		31
Misamis.....	9,201	2,975		12,176
Mountain Province.....	309			309
Nueva Ecija.....	13,650	6,194		19,844
Nueva Vizcaya.....	3,676	3,038		6,714
Occidental Negros.....	62,748	33,902		96,650
Oriental Negros.....	3,225	1,921		5,146
Pampanga.....	35,800	20,640		56,440
Pangasinan.....	3,733	2,550		6,283
Rizal.....	30,450	15,951		46,401
Romblon.....	96	17		113
Samar.....	3,669	1,571	173	5,413
Surigao.....	1,241	731		1,972
Tarlac.....	4,862	1,197		6,059
Tayabas.....	19,821	9,201		29,022
Zambales.....	6,766	6,180		12,946
Zamboanga.....	6,515	1,306		7,821
Total.....	337,290	185,189	173	522,652

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF AUGUST, 1927**

(No case and no death reported during the month)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF AUGUST, 1927.**

(No case and no death reported during the month.)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA  
DURING THE MONTH OF AUGUST, 1927**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, August 1, 1927:</b>				
Minor .....	150	142	61	353
Sewer .....	27	49	1	77
Vacating .....	8	11		19
Filling .....	13	35	18	66
<b>Total .....</b>	<b>198</b>	<b>237</b>	<b>80</b>	<b>515</b>
<b>Orders issued during the month:</b>				
Minor .....	17	8	19	44
Sewer .....		2		2
Vacating .....				
Filling .....	6		3	9
<b>Total .....</b>	<b>23</b>	<b>10</b>	<b>22</b>	<b>55</b>
<b>Orders completed during the month:</b>				
Minor .....	19	10	5	34
Sewer .....				
Vacating .....				
Filling .....				
<b>Total .....</b>	<b>19</b>	<b>10</b>	<b>5</b>	<b>34</b>
<b>Orders cancelled during the month:</b>				
Minor .....		2		2
Sewer .....	1			1
Vacating .....				
Filling .....				
<b>Total .....</b>	<b>1</b>	<b>2</b>		<b>3</b>
<b>Orders pending, August 31, 1927:</b>				
Minor .....	148	138	75	361
Sewer .....	26	51	1	78
Vacating .....	8	11		19
Filling .....	19	85	21	75
<b>Total .....</b>	<b>201</b>	<b>235</b>	<b>97</b>	<b>533</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations. ....	22	30	28	80
<b>Permits for minor building constructions:</b>				
Approved .....	89	41	36	116
Disapproved .....	6	4	4	14
<b>New buildings completed .....</b>	<b>16</b>	<b>30</b>	<b>35</b>	<b>81</b>
<b>Permits for light and mixed material constructions:</b>				
Approved .....	4	29	8	41
Disapproved .....	3	6	1	10
<b>Prosecutions:</b>				
Convictions .....	1			1
Dismissals .....		3		3
Amount of fines .....				
<b>Plumbing permits issued .....</b>	<b>45</b>	<b>63</b>	<b>44</b>	<b>152</b>
<b>Plumbing projects completed .....</b>	<b>74</b>	<b>92</b>	<b>62</b>	<b>228</b>
<b>Premises connected to the sanitary sewer to July 31, 1927. ....</b>	<b>2,516</b>	<b>4,315</b>	<b>717</b>	<b>7,548</b>
<b>Connected during the month .....</b>	<b>8</b>	<b>9</b>	<b>7</b>	<b>24</b>
<b>Total .....</b>	<b>2,524</b>	<b>4,324</b>	<b>724</b>	<b>7,572</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

SEPTEMBER, 1927

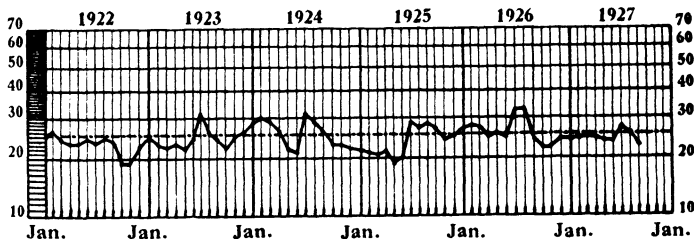
No. 9

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1927

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
LEONCIO LOPEZ-RIZAL, M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

### TABLE OF CONTENTS

	Page
House Bill No. 373, Granting Freedom to Lepers Under Certain Conditions, by REPRESENTATIVE AQUINO.....	465
A Preliminary Study on the Variations of the Infant Mortality and its Relations to the Crude Death-Rates in the Rural Districts of the Philippines, by REGINO D. PADUA.....	471
Postmortem Findings in Acute Jelly-Fish Poisoning with Sudden Death in Status Limphaticus, by H. W. WADE.....	479
School Health Notes.....	480
Our Dispensary System in Mindanao and Sulu.....	483
Notes on Malaria Deaths, by C MANALANG.....	485
Report of the Typhoid Situation in Manila During 1924.....	501
The Common Skin Diseases Among Filipinos, by PERFECTO GUTIERREZ.....	523
Lecture II: Medical Inspection, by MIRIAM E. GRIFFIN.....	527
Government Hospital Principles of Ethics.....	532
Miscellaneous .....	535
General Statistics .....	537



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VII**

**SEPTEMBER, 1927**

**No. 9**

**Memorandum for: The Honorable, the President of the Senate**

**Subject: HOUSE BILL NO. 373 PRESENTED BY REPRESENTATIVE  
AQUINO GRANTING FREEDOM TO LEPERS UNDER CERTAIN  
CONDITIONS**

1. After a careful perusal of the provisions of the Aquino Bill, the following comment is hereby respectfully submitted for your consideration:

For the purpose of clearness and simplicity of presentation the question will be taken up section by section.

Section 1 provides that every person suffering from leprosy who has been so diagnosed by the microscope is duty bound to report the fact to the Philippine Health Service either personally or thru his physician, in order to receive proper treatment. This section is contrary to established administrative practice which imposes upon the Philippine Health Service the duty of detecting and detaining persons suffering from dangerous communicable diseases and the making of provisions for their isolation until they shall cease to be a source of infection (Section 938, paragraph 6, Act 2711, 1926, Edition). Moreover, it is open to abuses as it does not establish the necessary qualifications in a physician who is supposed to make the microscopic examination. While typical and advanced cases of the disease is not hard to diagnose, either clinically or by means of the microscope, still quite frequently, cases are met with in which the most experienced physician has to summon all his diagnostic acumen in order to settle a given problem. It is on account of this fact and because it involves the future happiness of an individual that the Government has wisely provided that com-

mittee of three physicians of wide experience should have the final say on the diagnosis of the disease. At the present time this committee is composed of the Chief, San Lazaro Hospital; the Chief, Laboratory Department of the same hospital, and a private physician with a long experience in clinical diagnosis, laboratory practice, and public health work.

Section 2 provides that any leper who by reason of his financial status or social standing prefers to stay at his home, but isolated from his family, shall be permitted to be under the care and treatment of a private physician, although he should remain under the supervision of the Philippine Health Service. At first sight this section appears to be anti-democratic as it establishes a line between the well-to-do and the poor. To define whether or not a man is well-to-do or whether or not a man is well educated will result in a wide divergence of opinion. And it is open to question whether complete isolation as contemplated in this section can successfully be carried out. In the first place, the nature of the construction of the majority of our houses will be a bar to such isolation, as it has been found in the investigations made by the Sanitary Commissions of the Philippine Health Service that over two-thirds of our provincial houses consists of only two rooms, one larger used as living quarters and other smaller which is used for depositing beddings and wearing apparels. Moreover, the long period of isolation which will be required in one of the most chronic and protracted diseases known to science and the well known attachment of the Filipino to his family, will render all rules of isolation and constant warning ineffective.

With regard to the treatment of patients by private physicians, it is believed that no additional legislation is necessary, because such privilege is at present granted by the Director of Health, upon request of a qualified and experienced physician in accordance with existing regulations and in conformity with Section 1063 of the Revised Administrative Code. Our experience in the past, especially when the value of chaulmoogra oil and its derivatives, has not yet been definitely established as a therapeutic agent, is rather a sad commentary on the practice of some physicians who have subjected their patients to experimental drugs without deriving any positive benefit from them.

Section 3 provides that every leper without financial resources shall be confined at the San Lazaro Hospital, if living in

Manila, and in the provincial hospital, if in the provinces, provided that if he has been declared negative, twice within fifteen days, shall be paroled, but treatment shall be continued until the Philippine Health Service recommends otherwise. This section is not only detrimental to the patients themselves who have been declared negative once or twice within 15 days, but also fundamentally contrary to our present knowledge with regards to the disease. In the first place, a negative result after a series of treatment does not mean the complete disappearance of the infecting organisms from the body, but merely a retrogression of the disease as the organisms may still be found in the deeper layer of the skin, the lymph nodes and internal organs, capable at any time to break anew from the most trivial cause. Even with the present practice of retaining a negative patient for six months before granting parole, not a few suffer relapses even after that period, as proven by our experience at the San Lazaro Hospital where in 1922, of 29 that became negative, 4 or 13.79 per cent were again positive; after two years; in 1923 of 36 that became negative 7 or 7.45 per cent were again positive after two years; in 1924 of 96 that became negative 3 or 3.13 per cent were again positive after two years; in 1925 of 183 that became negative, 14 or 7.61 per cent were again positive after one and one-half years; in 1926 of 126 that became negative, 8 or 6.34 per cent were again positive after one year. In the light of the above experience, it is clear that even with the six months quarantine period required before parole is granted, evidence is accumulating that a longer period is advisable. This section also contemplates the establishment of provincial hospitals for the proper housing and hospitalization of provincial patients. This is at present impracticable due to the exiguous financial resources of our Government and the fact that, with the exception of a province or two, there are only a few scattered cases that will not warrant the establishment of regular hospitals. This phase of the problem has been adequately solved by the Philippine Health Service, which, in conformity with the recommendation of the Committee on Public Health of the Philippine Senate with the concurrence of the members of the Council of Hygiene and the Director of Health, is establishing regional leprosaria at strategic places and as fast as its funds will allow. One such leprosaria is now in operation in the City of Cebu and another is soon to be established in

Sorsogon for the Bicol provinces. The San Lazaro Hospital may likewise be looked upon as a central station for the provinces of Central Luzon. The idea of the Service is to establish additional ones at points where most needed, like Zamboanga or Cotabato for the Moro region, one in Ilocos for the Northern provinces, and one more in the Visayan Islands, possibly Iloilo, to accommodate the great number of lepers from those provinces. In the ultimate analysis, Culion will be reserved only for the indolent and incurable cases and its activities transferred to the points above indicated.

Section 4 provides that no leper in the advanced stages of the disease will stay or go around the streets, parks, churches, cines, theaters or attend social gatherings under penalty of a fine not to exceed ten pesos. This section appears to be impractical and cannot be enforced, especially when the provision of the following section is taken into consideration. It is, moreover, contrary to the solid foundation of democratic governments, because it grants arbitrarily to the Philippine Health Service the power to impose a penalty without due process of law.

Section 5 provides that all detentions or captures shall be held illegal, and no unnecessary violence shall be employed to secure the report of a suspect; all suspects shall only be notified of his obligation or duty to present himself to the nearest health station for examination. This section nullifies the provision of the preceeding one, because if a patient refuses to report, he cannot be compelled to do so, thereby placing in jeopardy the safety and welfare of the community.

Section 6 provides that the Culion Leper Colony shall be turned into a provincial hospital, losing its condition as a place of exile. This question will finally be solved with the full development of the present plan of the Philippine Health Service of establishing regional treatment stations as already stated in our commentary to section 3. Culion will be reserved for the more desperate and advanced cases who have not responded to treatment after reasonable period, and will likewise, serve as a heaven of refuge for those who have lost family ties and prefer to enjoy a life of freedom without humiliation.

Section 7 provides for the establishment of provincial hospitals in all places where they are deemed necessary in the opinion of the Director of Health. As hinted above the establishment of separate provincial hospitals is, besides being costly, not an

urgent necessity. On the other hand, the establishment of regional leprosaria will be more in keeping with our present knowledge of the disease and financial possibilities of the Insular Government. As has been ably presented in a memorandum to the Director of Health on November 5, 1920, by Dr. Proceso Gabriel, then an Assistant Surgeon of the service:

The advantage of hospitals in regional stations is that the patient can receive the visits of his family more frequently, get some extra food and clothing, something that it is very difficult to do if he is in Culion. This will bring about the moral well-being of the leper, will receive food from the Government with the addition of that coming from his family and the clothing which the Government may not be able to give. Moreover, with this proposed legislation, the coöperation of the public is assured, an essential factor for the success of the campaign against leprosy and we shall be able to find incipient cases who are willing to submit themselves to proper treatment and thus recover more quickly. On the other hand, with the present practice of absolute segregation, the sanitary authorities get the cases when the lesions are very manifest. Ninety-five per cent of the patients coming to San Lazaro Hospital prove this as they show advanced lesions of the disease.

Section 8 provides for the present status regarding compulsory isolation and hospitalization in Culion. As has been discussed elsewhere in this memorandum, it is believed that with adequate appropriation the establishment of regional leprosaria will better meet the present needs.

Section 9 provides that all lepers in the early stages of the disease shall be allowed to leave the hospital and when necessary for their personal convenience, with permission for a number of hours or days without the usual custody. This privilege is regularly granted to the inmates of the Leper Department with the necessary guard in plain clothes in order that the public will not be endangered thereby. It is of course plain that many of the intelligent ones can conveniently take care of themselves, but the majority will always disregard all rules and restrictions especially when staying among the members of their family.

From the foregoing comments, it will be seen that there is no urgent necessity in amending the present law for the control and treatment of leprosy and that even under the present statutes a great can be accomplished towards liberalizing certain provisions if adequate funds are voted.

In conformity with the spirit of present law the non-infective cases may stay at home and be treated in the regional leprosa-

ria close to their respective provinces. It should be remembered that the Third Scientific Congress on Leprosy held at Strassburg on July 31, 1923, held that leprosy is a contagious disease and that in countries where leprosy is endemic, as it is in the Philippines, segregation is necessary. A radical change in our present statutes regarding the control and treatment of leprosy therefore, be a backward step not warranted with our present knowledge of the disease and detrimental to our present international prestige which places our organization and modern treatment of leprosy as the first of its kind in the world.

(Sgd.) JACOBO FAJARDO  
*Director, Philippine Health Service*

# A PRELIMINARY STUDY ON THE VARIATIONS OF THE INFANT MORTALITY AND ITS RELATION TO THE CRUDE DEATH-RATES IN THE RURAL DISTRICTS OF THE PHILIPPINES <sup>1</sup>

By Dr. REGINO G. PADUA  
*Philippine Health Service*

In a previous paper (Padua, R. G.—“Preliminary analytic study on the measure of the force of mortality during the last decade in the Philippines,” Jr. P. I. Med. Ass., 1925, vol. V, No. 1, pp. 4-16) about two years ago, the rather excessive number of deaths at lower ages was pointed out and of those under one year emphasized. The scope of infant mortality is too broad to be discussed in a short period of time. Several investigators have already contributed to the literature great many facts concerning it, its relation with infantile beriberi and other new-born diseases, its proposed methods of control, and various other phases of the subject. It is, therefore, the intention of this paper to limit itself to the presentation of certain facts relative to the extent of variations in which infant mortality occurs in the rural districts of these Islands and the extent of its relation to the crude death-rates in the localities concerned.

For this study, the available provincial statistical records of 21 years (from 1905 to 1925 inclusive) as found in the official reports of the Philippine Health Service were utilized. The infant mortality rates per 1,000 births in each province were computed and tabulated; likewise, the crude death-rates per 1,000 Christian population were adjusted. In each of these (infant mortality and crude death-rates), a total of 869 observations (for the 21 years) was made. Due allowance was given to possible mistakes of recording which might have been committed in the collection of the raw data in the field. Undoubtedly, there were some errors unavoidably committed at the source, considering the present conditions and circumstances. But, the provinces that did not give fairly accurate returns were not included in the present study. This was thought nec-

---

<sup>1</sup> Read before the “VI Asamblea de Médicos y Farmacéuticos” Manila, February 17, 1927.

essary in order to obtain the results as accurately as possible. And, for the purpose of simplicity, the data were sorted and grouped in 4 five-year periods, leaving the year 1925 alone for comparison.

With the figures on hand, tables showing the frequency distribution, in infant mortality rates per 1,000 births, were constructed. From such tables, the following chief variation constants were calculated.

TABLE 1.—*Showing the chief physical constants of variation in annual infant mortality rates per 1,000 births in the rural districts of the Philippines*

Years	Mean rates	Standard deviation rates	Coefficient of variation
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
1905 to 1924, inclusive.....	181.71 $\pm$ 3.00	56.99 $\pm$ 2.12	31.37 $\pm$ 1.28
1905 to 1909, inclusive.....	181.67 $\pm$ 5.54	49.30 $\pm$ 3.92	27.14 $\pm$ 2.31
1910 to 1914, inclusive.....	174.44 $\pm$ 5.78	51.45 $\pm$ 4.09	29.49 $\pm$ 2.55
1915 to 1919, inclusive.....	213.25 $\pm$ 5.61	54.55 $\pm$ 3.97	25.58 $\pm$ 1.98
1920 to 1924, inclusive.....	159.39 $\pm$ 5.38	55.86 $\pm$ 3.81	35.04 $\pm$ 2.66
1925 alone.....	159.39 $\pm$ 5.15	53.47 $\pm$ 3.64	33.55 $\pm$ 2.53

As may be seen in Table 1, the annual infant mortality rate in the provinces during 20 years (from 1905 to 1924, inclusive) has a mean value of  $181.71 \pm 3.00$ , which is significantly greater than that during the year 1925 alone—the difference being  $22.32 \pm 5.96$ . There is no significant difference between the average infant mortality rate during the 20 years and that of the 5 years (1905–1909, inclusive). The same may be said of those during the periods of (1905–1909, inclusive) on one hand and of (1910–1914, inclusive) on the other—the difference being even smaller than its probable error ( $7.23 \pm 8.00$ ). In other words, there was no material reduction of infant mortality rate if these two quinquennial periods are to be considered and compared with one another. During the quinquennium of from 1915 to 1919, the rural infant mortality jumped up, it having a mean value of  $213.25 \pm 5.61$ , which is significantly greater than those of both the preceeding and the next five-year periods. This phenomenon with respect to infant mortality may be explained by the effect of the 1918–1919 influenza epidemic and that of smallpox which also occurred in 1919. After the epidemic quinquennium, there is observed in the next five-year periods a marked fall in the mean infant mortality rate, it being  $159.39 \pm 5.38$ . This apparent reduction, is, however, expected after a great epidemic, which might not have been totally effected by other means than the biological or regulatory mechanism in population growth, as pointed out by (Pearl, R.—“A further



note on war and population"—Science, 1921, vol. 53, pp. 120-121), after great human catastrophes. Moreover, after the influenza and smallpox epidemics that extracted the constitutionally weak population, the survivors were presumably better fitted to withstand the effects of other diseases and were perhaps biologically stronger to give rise to more resistant progeny. The provincial mean infant mortality in the last quinquennium is by no means different from that in the year 1925 alone. This indicates that there was no significant reduction of rural infant mortality during the last six years.

In like manner, the variabilities of the infant mortality rates do not significantly differ in one quinquennium from the next preceding one. This is true whether or not such a variability is measured or expressed absolutely in terms of standard deviation or relatively in terms of coefficient of variation (see Table 1).

To find out whether or not the excessive infant mortality in the provinces is a factor in or affects the general death-rate, similar tables showing the frequency distribution of variation, in crude death-rates per 1,000 Christian population, in each quinquennium, were prepared; and the chief physical constants as shown in Table 2 were derived therefrom. The crude death-rates were calculated in terms of the estimated Christian population since the statistical data of the non-christian element in the provinces were not very reliable.

TABLE 2.—*Showing the chief physical constants of variation in annual death-rates per 1,000 christian population in the provinces*

Years	Mean in death-rates	Standard deviation in death-rates	Coefficient of variation in per cent
1905 to 1924, inclusive.....	24.36 $\pm$ 0.39	7.34 $\pm$ 0.27	30.14 $\pm$ 1.22
1905 to 1909, inclusive.....	26.00 $\pm$ 0.98	8.70 $\pm$ 0.69	33.47 $\pm$ 2.94
1910 to 1914, inclusive.....	22.25 $\pm$ 0.68	6.06 $\pm$ 0.48	27.22 $\pm$ 2.32
1915 to 1919, inclusive.....	28.73 $\pm$ 0.66	6.44 $\pm$ 0.47	22.41 $\pm$ 1.71
1920 to 1924, inclusive.....	20.87 $\pm$ 0.49	5.09 $\pm$ 0.35	24.41 $\pm$ 1.76
1925 alone.....	20.07 $\pm$ 0.51	5.32 $\pm$ 0.36	26.50 $\pm$ 1.93

Like in the case of infant mortality, there is observed significant difference between the mean annual death-rate per 1,000 Christian population in the average of 20 years (24.36  $\pm$  0.39) and that in the year 1925 alone (20.07  $\pm$  0.51). This may mean a reduction if there were no great epidemics in 1918 and 1919. A slight apparent reduction, if there be any, occurred in the quinquennium of from 1910 to 1914 in which the mean crude death-rate is 3.75  $\pm$  1.20 smaller than in the preceding one. In the five-year period, 1915 to 1919, the total crude

death-rates in rural communities has a mean value of  $28.73 \pm 0.66$ , which is by far significantly greater than that in the next quinquennium. The abrupt reduction in the latter might have been due, as was previously pointed out, to the probable elimination of the weaker race, thus leaving behind that portion of constitutionally stronger population. Excluding this intervening epidemic period, there is no significant difference between the mean annual crude death-rate in quinquennium 1920 to 1924 from that in the quinquennium 1910 to 1914, having regards to the probable errors. The same may be said with respect to the mean death-rates in 1925, if compared with that of the preceding quinquennium. It would seem therefore, that, like in the case of infant mortality, the foregoing expressions of the crude death-rates in the provinces do not indicate significant reduction, if the effects of the influenza and smallpox epidemics are excluded.

The measurement of dispersion, altho relatively high, is nevertheless the same if one quinquennium is compared with another and if due regard is given to the probable errors involved. In fact, the phenomena observed in the variations of infant mortality are to a great extent in relation to those of the crude death-rates. This is well illustrated in which there is visualized an apparent parallelism of the two curves.

To show this relation in a more precise way, altho Greenwood and Brown (Greenwood, M. and Brown, J. W.—“An examination of some factors influencing the rate of infant mortality”—*Journal of Hygiene*, 1912, vol. 12, pp. 5–36) have pointed out that there is a usual association between a high rate of infant mortality and a high death-rate at all ages, correlation tables were prepared and their coefficients were calculated, as may be seen in the next table.

TABLE 3.—*Showing the coefficient of correlation between the annual infant mortality rates per 1,000 births and the crude death-rates per 1,000 christian population.*

Year periods	No. of observation	Coefficient
1905 to 1924, inclusive	820	$+0.731251 \pm 0.024505$
1905 to 1909, inclusive	180	$+0.697079 \pm 0.057790$
1910 to 1914, inclusive	180	$+0.766597 \pm 0.046352$
1915 to 1919, inclusive	215	$+0.686283 \pm 0.054414$
1920 to 1924, inclusive	245	$+0.728103 \pm 0.045274$
1925 alone	49	$+0.670514 \pm 0.053035$

Table 3 clearly indicates that, in each of the groups, the infant mortality and the crude death-rates, if correlated with

one another, give a significant and positive correlation coefficient. It is likewise an interesting phenomenon that, in those periods in which epidemics occurred, the coefficients are apparently, although not significantly, smaller. From these correlation coefficients which are considered sensitive in measuring the relation between variables and which in this study range from  $+0.670514$  to  $+0.766597$ , one can not but infer that the crude death-rates in the provincial districts seems to go hand in hand with the infant mortality rate. This would imply that the very factors, whether physical or social or what not, that operate and increase our general death-rates may, with perhaps few exceptions, also cause a rise in the infant mortality, or vice-versa. In a subsequent paper on this subject, it is hoped that a precise measurement be determined of the relation of the rate of infant mortality with the specific death-rates at various ages. A study of this nature will intend to find out primarily the possible causes that may be influencing our rate of infant mortality and secondarily the probable lines of approach to the solution of such an intricate problem. For, the question is: are the existing environmental and biological factors, that may be partly if not chiefly concerned in our actual infant mortality rate, beyond administrative control? That inquiry seems to require an urgent reply.

In conclusion, based on the findings as previously indicated in this paper, the following facts may be made out:

(a) That the average mean infant mortality rate per 1,000 births during the last 20 years in the provinces is  $181.71 \pm 3.00$  and that, during the quinquennium of from 1915 to 1919 in which epidemics of influenza and smallpox occurred, it became accentuated to  $213.25 \pm 5.61$ .

(b) That the mean infant mortality rate in the year 1925, altho lower than the average of 20 years, yet is incidentally equal to that of the preceding quinquennium. If the figures are true, there was no significant reduction of infant mortality at least during the last six years. In fact, excluding the 5-year period of from 1915 to 1919 inclusive, the average mean infant mortality rate in each quinquennium does not significantly differ from that in the preceding one.

(c) That the average mean crude death-rate in 20 years in the rural districts is  $24.36 \pm 0.39$ ; and in the year 1925 alone, it had a mean value of  $20.07 \pm 0.51$  which is in no way different from that of the average of the preceding quinquennium. In fact, in no single year during the period covered by this

study has the crude death-rate had a mean value below 20 per 1,000 Christian population. Practically the same sort of a curve in variation exists in the general death-rate as in the infant mortality rate.

(d) That there exists a positive and significant correlation between the infant mortality and general death-rates. This implies that the hope of cutting down the general death-rate in our rural districts is, and should be pinned to the effectiveness of the efforts and methods that tend to mitigate or weaken the potentiality of the factors which influence the excessive infant mortality in the Islands.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
PHILIPPINE HEALTH SERVICE  
OFFICE OF THE DISTRICT HEALTH OFFICER  
FORTY-EIGHTH HEALTH DISTRICT

JOLO, SULU, *September 22, 1927*

*To: The Director of Health, Manila*

*Subject: A case of cyclops*

1. I have the honor to forward herewith copies of the picture of a recently born baby girl in the Sulu Public Hospital, whose description which is made by Dr. B. M. Panganiban is as follows:

A CASE OF CYCLOPS

On September 20, 1927, at 4:50 a. m., there was born in the Sulu Public Hospital, Jolo, Sulu, attended by Dr. B. M. Panganiban, a fetal monster with one median eye, hence a cyclops. The eye is situated on the middle of the forehead with eyelashes on the upper eyelid. There is no eyeball. What is normally the chin is occupied by a soft projection with a single opening which is apparently the nose. There is no mouth. The two ears are well developed and are situated at what is normally the position of the angle of the jaw and they almost meet at the upper front part of the neck. From the neck down, the creature is normal.

The baby is premature, 8 months old. She lived for twenty-eight minutes. The mother is well. No family history of importance.

JULIAN PILARES  
*District Health Officer*



**A CASE OF CYCLOPS**

**Attended by Dr. B. M. Pañganiban, Sulu Public Hospital, Jolo, Sulu,  
September 20, 1927**

## POSTMORTEM FINDINGS IN ACUTE JELLY- FISH POISON- ING WITH SUDDEN DEATH IN STATUS LIMPHATICUS

By H. W. WADE, M.D.

*Chief Pathologist, Culion Leper Colony, Philippine Health Service*

### ABSTRACT

A well developed, very healthy young man, with only slight remaining evidences of leprosy, was working waist deep in the water of a mangrove swamp when he called out in distress to fellow workmen nearby that something had bitten him. He quickly collapsed, breathing with difficulty, and died within a very few minutes.

No mark suggestive of a snake bite could be found, nor any other abnormality except purplish (livid) markings ascribable only to a large, long-tentacled jellyfish. The head was livid. The lungs were distended, did not collapse, and contain much frothy serous material that had escaped from the alveolar capillaries. The right heart was full, the blood fluid and dark. The viscera were congested, especially the kidneys which showed parenchymatous injury and albuminous material in the glomerular capsules.

The fatal outcome was too sudden to be ascribed to this poisoning alone. Definite evidence of status lymphaticus was found, and it is probably because of the peculiar unstability known to exist in this condition that the unquestionably severe shock of the jellyfish sting induced sudden death.

This case is of interest not so much because death occurred as because an opportunity was had to observe the anatomical changes in acute severe jellyfish poisoning.

## SCHOOL HEALTH NEWS

Every pupil in every school may choose his life companions. Choose now—will you learn the rules of hygiene and live with: **HEALTH, WEALTH AND HAPPINESS**

or will you prefer to be ignorant and live with: **DISEASE, POVERTY, AND MISERY**

**CHOOSE—WHICH?**

The preventable diseases of the Philippine Islands kill more than 100,000 people every year. The fact that they are *preventable* diseases means that this great loss of life is all unnecessary. Think how much pain one sick person must suffer before the sickness ends in death. Think how sad the relatives and friends are made if it is the father of a family, think how all things in the lives of the widow and children are changed and made more difficult!

Can you think of all this, multiplied 100,000 times? If you can, you may have some idea of the total of pain and suffering which occurs in the Philippine Islands every year—pain and suffering which need not occur—which *should* not occur.

If all this is just a waste, if all this loss of life—this yearly calamity—is not necessary, if all can be stopped, why, then, does it continue? Why does not somebody do the thing which will stop it?

The answer is that there are many reasons, but the most important of all is that the people must stop it themselves, nobody else can do it for them. This great number of deaths results from the fact that most of the people are living just as their grandfathers live before doctors and sanitary officers had learned how disease goes from one person to another and before they had learned how to stop the spread of preventable diseases. Sanitary officers know such things now but the people continue to die of such diseases because their personal habits and customs are the same as those of their fathers and grandfathers. They see no reason to change because they do not know that certain of the things they do make them get diseases which cause them to be sick and die. If they could be led to change their insanitary habits and customs for sanitary habits and customs



they would be more healthy and therefore happier and able to do better work, and get higher wages for their work.

It is clear that to be well the people must learn and practice sanitary and healthful ways of living. The great question is, how can this be brought about? The answer to such a question is that the children must learn in school to use good, sanitary, habits before they have learned bad and insanitary habits from those with whom they live and meet outside the school. Then the children must be the teachers of their older relatives and of their younger brothers and sisters in this fight against disease.

It is the purpose of those in charge of this section on "School Health" in the "School News Review" to give the school people good and modern information concerning the fatal and the disabling preventible disease of the Philippine Islands. If the school people are helped by this section to take an interest in health matters, and if this section helps the children to form sanitary health habits just so will it help the future men and women of the Philippine Islands to have as their life companions HEALTH, WEALTH, AND HAPPINESS.

### MALARIA

The first disease we shall talk about is malaria. We bring this up first because it is the greatest enemy of the school children. It does not kill quickly, it is not like cholera, and yet it is said that in the year 1926, nearly 25,000 people died of it in the Philippine Islands. Only tuberculosis killed a greater number, this disease killed nearly 30,000.

The deaths malaria causes do not make it the worst disease. It is the worst because, more than any other, it makes people unable to work well. School children who have malaria cannot study hard and they cannot learn their lessons well.

In the schools of malarious districts nearly all the children are affected. This disease spares neither age nor sex. Its victims are feverish much of the time, their blood is thin, they are pale and weaker than healthy children. They are compelled to be away from school much of the time because they are too weak and sick to come. When they are in school they do not learn as readily as normal children and many of them eventually become discouraged and leave school never to return. Their education stops and they grow up to be ignorant men and women. Their malaria does not stop unless they are properly treated with quinine and in malarious communities the people are frequently so poor they cannot afford to buy quinine. Such people,

as they grow up, developed what is called chronic malaria. The typical adult with chronic malaria is sick with fever, now and then, has a chill occasionally and never wants to work. His employer cannot depend upon him and is not willing to pay him more than the lowest wages. His family grows up in poverty and is no help to the community.

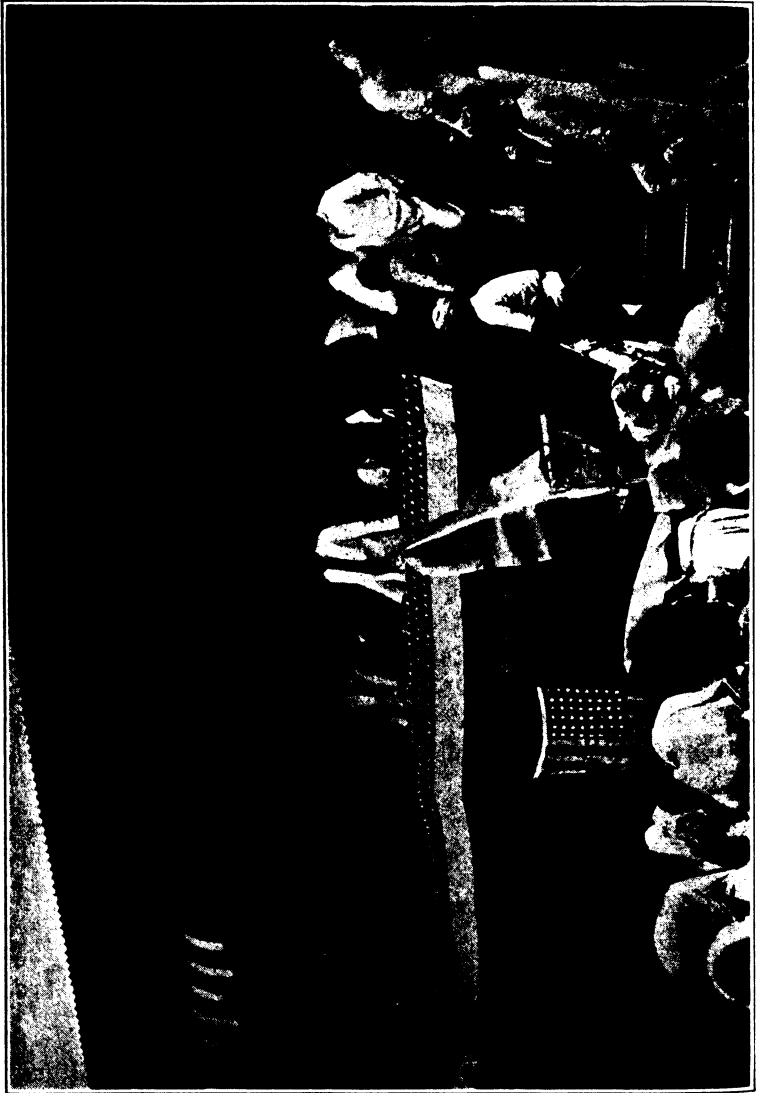
The deplorable part of all this is that the malarious child is not naturally dull, he grows up in ignorance not because he is mentally defective, he becomes a worthless member of the community not because he has no love for his family—all these things happen because of infection with the parasites of malaria.

Malaria is a preventible disease. The school pupils of the Philippines can play an important part in the eradication of malaria from their Islands. To do this they must know the nature of malaria, how it is contracted, how it can be prevented, how it can be cured and how it can be finally eradicated.

## OUR DISPENSARY SYSTEM IN MINDANAO AND SULU

The dispensary has a primary function to perform. It not only alleviates suffering, but also educates people in the right method of living. There was probably no governmental activity implanted in Mindanao and Sulu that has won the hearts of the Moros than the establishment of dispensaries and hospitals throughout the region. According to the latest report there have been treated in eleven hospitals established in different provinces 741 patients and in ninety-five different dispensaries 180,157 persons have been treated according to the report for July last.

The latest addition is a dispensary building in Parant, Sulu, which was inaugurated on September 3, 1927. The building is of strong material construction with a ground floor for the dispensary proper. The upper story is reserved as a sick ward for patients needing longer treatment. The construction was finished in six weeks at a cost of ₱2,300. The inauguration was attended by a large number of people representing all classes of the population.



Inauguration of Parang Public Dispensary, Sulu, P. I.

## NOTES ON MALARIA DEATHS

By C. MANALANG

*Philippine Health Service*

The creation of the Malaria Control Section has given its personnel an opportunity to inquire into the malaria death statistics heretofore reported. It is generally admitted that malaria death reports 24,267 in 1925 in the Philippines were very high, due to lack of study and proper medical attendance and the certification of most deaths by non-medical men. The same is said to be true in other tropical regions. Efforts should therefore be exerted to get some reasonable corrective factor.

This paper does not deal with any such corrective factor, but merely puts on record for the information of the health officers and others interested, some tangible data which should stimulate further studies not only of malaria but also of the diseases and deaths which have been diagnosed as malaria, and the institution of preventive measures. The studies should be continuous, for a long time, and can be done in places where facilities both clinical and laboratory are available. It is hoped that these studies will tend to correct the present figures upon which alarmists who are ignorant of the local conditions, base their contentions.

Tiedeman in his "Malaria in the Philippines" published in the Journal of Preventive Medicine, January, 1927, has the following to say on mortality, page 218:

*Mortality.*—Early in the Laguna work the attempt was made to get accurate information regarding deaths reported as due to malaria. An autopsy was performed in every one of the 14 instances in which a death was reported as due to malaria in the Province of Laguna between May 29, and August 4, 1922. Five of these (35.7 per cent) were found to be actually due to malaria, while "the rest, although due to various other causes, yet likewise showed certain post-malarial lesions." While these autopsies are neither numerous enough nor representative enough to serve as the basis for the establishment of a corrective factors, yet they indicate that the reported malaria mortality rates are much too high. In explanation, it may be said that physicians are scarce and are not always consulted where available. Many deaths occur without a physician in attendance and the cause of death is determined by some non-medical municipal official upon advise of relatives of the deceased. The Philip-

pine Health Service is aware of this condition and is making efforts to correct it.

A search showed that this was based on an article by Dr. R. Padua of the Philippine Health Service, who performed the autopsies, published in the monthly Bulletin of the Philippine Health Service, February, 1923. This is what Doctor Padua had to say about the autopsies, page 49:

Where deaths occurred in any municipality of the province, especially if due to malaria, attempts were made to urge the families of the diseased to permit the autopsy. Against extreme difficulties and opposition, the writer could only perform 14 such autopsies in the field; and although in five cases death was due to malaria, yet the rest likewise presented certain lesion referable to previous attacks.

After the organization of the Section a survey was made of Bato-Bato Agricultural Colony, Tawi-Tawi, Province of Sulu. The population showed 69 per cent with enlarged spleen and 37 per cent with parasites in the blood. Children below 10 years had 90 per cent splenomegaly and 54 per cent blood parasites, 50 per cent of which were crescents. Yet no death was recorded during their two years of residence. This is so far the worst place of about 200 surveys to date.

Later, four places in the province of Misamis reporting most malaria deaths were surveyed and resurveyed by two different individuals at different times without finding splenomegaly nor blood parasite in 350 resident children. Yet the official yearly reported death for malaria from this province is around 1,200.

With the kind assistance of Doctor Padua, the writer came to possess copies of his postmortem protocols on the 14 postmortems in Laguna and some 83 slides from different organs of the cases examined.

## POSTMORTEM PROTOCOLS

### Case 1

#### *General data.*

Eugenia Lopez, 15-year old female Filipino, student by occupation, single, living in the barrio of San Juan, Longos, Laguna. Had first attack of malaria three years ago in that barrio. Died May 29, 1922, without medical attendance. Autopsy performed at 12 noon, May 30, 1922, in her residence.

#### *Gross anatomical findings.*

Foul smelling, frothy fluid from the mouth and ears. Rigor mortis present.

Spleen dark and hard, measuring about 30 x 15 x 5 cm.

Liver also enlarged to 3 cm. below the costal margin, dome on the level of the third intercostal space. Nothing unusual in gastro-intestinal tract.

## Case 2

*General data.*

Agaton Villasana, 44-year old male Filipino, laborer, married, living in Magdalena, Laguna. Date and place of first malarial attack unknown. Died on June 10, 1922, without medical attendance. Autopsy performed at 11 a. m. on June 11, 1922, in his residence.

*Gross anatomical findings.*

Spleen measures 15 x 8 x 4 cm. with signs of chronic interstitial splenitis.

Kidneys and liver apparently normal.

Lungs showed chronic fibrous tuberculosis with adhesions between the parietal and visceral pleura.

## Case 3

*General data.*

Josefa Mordino, 50-year old female Filipino, housekeeper, living in Magdalena, Laguna. Date and place of first malarial attack undetermined. Died June 10, 1922 without medical attendance. Autopsy performed at 12.15 p. m., June 11, 1922, in her residence.

*Gross anatomical findings.*

Spleen measures 20 x 10 x 4 cm., soft and friable.

Liver extended 2 cm. below the costal margin, its dome on the fourth interspace.

Kidneys slightly contracted.

Intestines adherent on the lower anterior abdominal wall.

## Case 4

*General data.*

Julian Subido, 24-year old male Filipino, laborer, widower, living in the barrio of Masiit, Nagcarlan, Laguna. Had first malarial attack in 1909 in the same barrio. Died at 11 a. m. June 19, 1922, without medical attendance and autopsy performed at 10.40 a. m., June 20, 1922, in his residence.

*Gross anatomical findings.*

Foul smelling, bloody fluid from both ears.

Thorax emaciated and abdomen bulging.

Rigor mortis present in both extremities.

Abdominal cavity moist. Gastro-intestinal tract bulged out due to gas. Faecal matter oozes from abdominal incision (evidence of intestinal perforation). Intestinal loops matted together and covered with sero-fibrinous materials. Acute generalized peritonitis.

Spleen slate colored, soft, measuring 25 x 12 x 5 cm. Hyperplasia of the splenic tissue.

Liver soft extending two centimeters below the costal margin and 5 cm. below the xyphoid, and upward to the third interspace.

Kidneys present acute parenchymatous degeneration. Capsule of the right kidney adherent to the cortex.

Perforation of the gut found 15 cm. above the ileo-coecal valve.

*Post-mortem diagnosis.*

1. Perforation, intestinal, typhoid.
2. Enteritis, acute, ulcerative, typhoid.
3. Peritonitis, acute, generalized.
4. Splenitis, acute.
5. Degeneration, parenchymatous, acute, kidney and liver.

## Case 5

*General data.*

Pedro Avesian, 31-year old male Filipino, soldier, widower, stationed at Santa Cruz, Laguna. First malarial attack occurred 7 years ago in San Pablo, Laguna. Died at 8 p. m., June 21, 1922, under Dr. Lejano. Autopsy performed at 3.10 p. m., June 22, 1922, in Santa Cruz, Laguna.

*Gross anatomical findings.*

Discoloration of the back. Bloody fluid from both ears. Rigor mortis present in both extremities.

Abdominal cavity, dry. Gastro-intestinal tract apparently normal.

Liver extends 2 cm. below the costal margin, its dome adherent to the diaphragm at the level of the fourth intercostal space.

Spleen slate colored, and measures 15 x 10 x 4 cm.

Kidneys enlarged, cortex thickened with evidence of acute parenchymatous degeneration.

The upper lobe of the right lung in stage of gray hepatization, while the lower lobe of red hepatization; middle lobe with oedema and congestion. Left lung, outside of hypostatic oedema and congestion, apparently O. K.

The heart with evidence of acute myocarditis; left ventricle dilated but without appreciable hypertrophy.

## Case 6

*General data.*

Basilio Adopina, 30-year old male Filipino, laborer, married, living in Siniloan, Laguna. Had first malarial attack when 6 years old in the same town. Died at 4 a. m., June 23, 1922, without medical attendance, and autopsy performed at 2:30 p. m., June 23, 1922, in his residence.

*Gross anatomical findings.*

Intestine and liver apparently O. K.

Spleen—bound by adhesion on the anterior border; it is also adherent to the posterior abdominal wall; measures 20 x 10 x 4 cm.; bluish gray color; posterior pole firm in consistency while the anterior is soft and fraile; border lobulated.

Kidneys with cloudy swelling.

## Case 7

*General data.*

Vitalina Corpus, 2-year old Filipino child, living in Siniloan, Laguna. Had first malarial attack while one year old in that town. Died at 6 a. m., June 23, 1922, without medical attendance, and autopsy performed at 4:30 p. m., June 23, 1922, in her residence.



*Gross anatomical findings.*

Spleen measures 20 x 10 x 4 cm., fairly hard, dark purple in color, without lobulated margins.

Pancreas hard and enlarged.

Liver 1 cm. below the costal margin, consistency firm, extending upward to the level of the third rib.

Kidneys with evidence of cloudy swelling.

**Case 8***General data.*

Clemente Macalental, 4-year old male Filipino child, living in the Barrio of San Bartolome of the municipality of San Pablo, Laguna. Had first attack one year ago in that barrio. Died at 2.30 p. m., June 26, 1922, in the town of San Pablo, Laguna.

*Gross anatomical findings.*

Face, dull, yellowish brown in color. Abdomen—bulging. Rigor mortis already absent at the time of the autopsy.

Abdominal cavity dry.

Spleen adherent posteriorly; measures 15 x 10 x 3 cm., dark purplish blue; and firm in consistency. Malpighian bodies very prominent; posterior portion, very soft and present liquefaction.

Intestine full of gas, otherwise normal.

Liver—posteriorly, apparently normal in size but presents yellowish brown discoloration. Posterior lobe extends as far below as 7 cm. from the costal margin. Cut surface is yellowish with prominent liver tuberculi and slight pigmentation.

Kidneys with evidence of cloudy swelling.

**Case 9***General data.*

Elisa Araw, 26-year old female Filipino, housekeeper, married, living in the Barrio of Buncal of the municipality of Magdalena, Laguna. Had first malarial attack while 7 years old in that barrio. Died at 7 a. m., June 27, 1922 without medical attendance and autopsied at 11 a. m., June 27, 1922, in her residence.

*Gross anatomical findings.*

Body still warm.

Abdominal cavity is dry.

Intestines apparently O. K., spleen measures 25 x 20 x 10 cm., firm and present nodular erosion on the anterior pole. In the posterior pole, there is a definite softening, containing bloody fluid. Spleen is dark purplish blue in color.

Liver extends 3 cm. below the costal margin and 5 cm. below the xyphoid, and upward to the level of the third rib, with yellowish brown pigmentation.

Kidneys enlarged, adherent all around; the capsules strips off easily from the cortex, the outside surface with petchial hemorrhages; evidence of cloudy swelling; tubules apparently injected and pelvis with distinct red spots. The glomeruli are prominent.

Uterus atrophied. Both adnexi are O. K.

## Case 10

*General data.*

Julia Platero, 12-year old female Filipino, single, living in the barrio of Santa Catalina, municipality of San Pablo, Laguna. Died as a result of a stab penetrating abdominal wound.

*Gross anatomical findings.*

Clothing soaked with blood. Stomach and portion of the transverse colon are found protruding through the wound, on the right epigastric region. Right arm found flexed. Rigor mortis present in both extremities.

The wound is about 7 cm. long, oblique, just below the costal margin on the right epigastric region; apparently produced by a sharp pointed instruments penetrating through the abdominal cavity. Blood clots are found on the border of the wound. The portion of the stomach outside the wound is red and injected, while the part inside is not; indicating that the organ protruded through the wound before the death. At the anterior portion of the lesser curvature of the stomach, there is a lacerated area on the serosa; following this with a probe, the wound leads to the cavity of the lesser omentum. Blood is found in the peritoneal cavity beneath the wound. The wound passes through the anterior portion of the liver about 1 cm. above the lower border of the organ to the inner side of the gall bladder attachment. This wound is about 5 cm. long on the anterior surface of said organ. There is found a hematoma in the transverse mesocolon. The intestinal wound is located in the first portion of the duodenum 1 cm. from the pylorus and runs almost longitudinally 5 cm. long, and penetrates the lumen of the gut and the cavity of the stomach.

Spleen about 20 x 10 x 3 cm., soft and purplish in color. The other abdominal organs are apparently O. K.

Œdema and congestion in the posterior portion of the lower lobe of the left lung. Similar lesions are found in the right lung.

Heart is found contracted especially the left ventricle. Mitral ring admits one finger, without apparent vegetation in the valve. Aorta and its valve are intact. Postmortem clots are found in the right ventricle and right auricle. Tricuspid valve admits three fingers and apparently without vegetations.

*Post-mortem diagnosis.*

1. Wound, stab, penetrating, epigastrium.
2. Wound, stab, perforating stomach and intestines.
3. Wound, stab, liver.
4. Hyperplasia, spleen, acute.
5. Congestion and œdema, hypostatic, lungs.

## Case 11

*General data.*

Juan Lopez, 22-year old Filipino, laborer, single, living in the barrio of San Juan, municipality of Longos, Laguna. Had first malarial attack while 7 years old in that barrio. Died at 3 p. m., July 12, 1922, without medical attendance, and autopsy performed at 11.45 p. m., July 13, 1922, in his residence.

*Gross anatomical findings.*

Peritoneum is dry.

Spleen is adherent to the posterior abdominal wall, measures 35 x 12 x 6 cm., soft and slate colored. The pulp is very visible with increased amount of trabeculi.

Liver small in size, dome extending to the third interspace, and lower border to 5 cm. above the costal margin, yellowish in color. Gall bladder is slightly distended, containing whitish thick fluid.

Left kidney larger than normal and hard in consistency, cloudy swelling at the cortex and slight congestion at the pyramids. Capsule does not peel off easily and leaves a rough surface.

Intestines with small nodular lesions, probably tuberculosis.

**Case 12***General data.*

Braulia Villareal, 20-year old Filipino, housekeeper, married, living in the barrio of San Juan, municipality of Longos, Laguna. Had first malarial attack on March 19, 1922, in that barrio. Died at 7 a. m., July 13, 1922, under Doctor Calingo's service. Autopsy performed at 2:50 p. m., July 13, 1922, in her residence.

*Gross anatomical findings.*

Hard mass palpable in the lower part of the abdomen extending as high up as the umbilicus. Œdema of subcutaneous tissue. Yellowish, clear serus fluid present in abdominal cavity. General œdema of viscera.

Uterus is much enlarged, firm in consistency, adnexi are apparently O. K., although the broad ligaments are edematous. Apparently the uterus is subinvolved after child birth.

Spleen measures 15 x 14 x 6 cm., slate colored and firm in consistency. Cut surface dark brown with apparent hyperplasia of splenic tissue. Trabeculi prominent. Evidence of scar tissue on the surface of the spleen.

Liver not apparently enlarged. Dome at the level of the third rib, lower border about 3 cm. above costal margin; dark green color; cut surface with malarial pigmentations. Gall bladder distended and yellowish. Sac œdematous; contains viscide brownish yellow fluid.

Left kidney enlarged, consistency soft with marked cloudy swelling. Capsule strips off easily. Right kidney presents the same picture as the left.

**Case 13***General data.*

Magdaleno Yepis, 25-year old male Filipino, laborer, living in the barrio of San Juan, Longos, Laguna. Had first malarial attack in June, 1922, in that barrio. Died at 2:30 p. m., July 14, 1922, without medical attendance, and autopsy performed at 9:25 a. m., July 15, 1922, in his residence.

*Gross anatomical findings.*

The body is emaciated. Eyes sunken, nose pinched, ribs prominent, scanty subcutaneous in the thorax. Slightly distended abdomen and extremities rigid.

Abdominal cavity, dry; gastro-intestinal tract distended with gas.

Lungs—œdema and congestion of the left upper lobe, while the lower lobe is adherent to the diaphragm. Small tubercle found in the posterior

surface of the left interior lobe. Right posterior lobe adherent with the thoracic wall, with small tubercle at the apex. Hypostatic congestion and oedema of both right and left lungs.

Heart apparently normal.

Liver—dome on the level of the third interspace; lower lobe about 2 cm. below the costal margin; adherent to the abdominal wall; with evidence of acute parenchymatous degeneration. Gall bladder apparently normal.

Spleen—adherent posteriorly; triangular in form, measuring 14 cm. on each side; soft and slate colored, about 4 cm. thick; cut surface dark purplish gray; trabeculi not much increased; evidence of acute inflammatory process.

Kidneys with cloudy swelling. Adrenal atrophied.

#### *Post-mortem diagnosis.*

1. Splenitis, acute (?), hyperplastic, malarial.
2. Tuberculosis, pulmonary.
3. Pleuritis, adhesive, tubercular.
4. Congestion and oedema, hypostatic, lungs.
5. Degeneration, parenchymatous, acute, kidneys and liver.

#### **Case 14**

##### *General data.*

Antonia de Ramos, 18-year old female Filipino, housekeeper, single, living in the barrio of Balion, municipality of Pangil, Laguna. Had first malarial attack in 1920 in that barrio. Died at 1 p. m., August 4, 1922, without medical attendance, and autopsied at 12.15 p. m., August 5, 1922.

##### *Gross anatomical findings.*

Abdomen, dry. Transverse column distended.

Spleen on the posterior surface is adherent to the abdominal wall; measures 20 x 10 x 6 cm.; uniformly soft; purplish gray in color. In the neighborhood of the hylos, there are adhesions connected to the gut. Cut surface is dark brown with greenish pigmentation, especially in the posterior pole. Hyperplasia of the splenic tissue and trabeculae; malpighian bodies are apparently normal.

Liver also enlarged, extending up to the third intercostal space and below to 7 cm. from the xyphoid process. Cut surface yellowish with circumscribed greenish purple areas; evidently of malarial pigmentation. The capillaries are engorged. Gall bladder apparently intact.

The omentum is adherent to the parietal peritoneum, which is greenish purple in color.

Left adrenal is atrophied. The left kidney presents cloudy swelling. Pelvis normal, capsule peels off easily. On cutting, there are hemorrhagic spots beneath the capsule. The right kidneys are flabby and slightly enlarged. Cut surface presents congestion and acute parenchymatous degeneration.

Uterus is very small; and adnexi are apparently normal.

Peyer's patches are somewhat prominent but no evidence of typhoid ulcerations.

Lungs adherent all over. On cutting, numerous tubercles are found.

Heart is flabby, left ventricle dilated but without appreciable hypertrophy. Mitral, aortic, and tricuspid valves intact. Right ventricle likewise dilated and muscle wall atrophied.

*Post-mortem diagnosis.*

1. Tuberculosis, pulmonary.
2. Splenitis, hyperplastic, chronic, malarial.
3. Pigmentation, malarial, liver.
4. Degeneration, parenchymatous, kidneys.
5. Atrophy, adrenal.

**COMMENTS ON POSTMORTEM PROTOCOLS**

1. The general data gave only history of first malarial attack. No history was given of illness which terminated in death except case 10 who died as a result of stab wounds. No history of possible brain implication; head was not opened in all. No history of possible heart, lungs and throat affections. These were apparently not examined in case 9. (Cases 1, 3, 4, 6, 7, 8, 9, 11, and 12). The heart was not examined in case 2. The intestines were not mentioned in 3 instances (Cases 2-7 and 12). They were mentioned as apparently O. K. or nothing unusual in 6 (Cases 1, 5, 6, 8, 9, and 13) and as "probably tuberculosis" in case 11. It is suspected that the examination were superficial. In case 3 the intestine was mentioned as adherent to the lower abdominal wall, but the nature of the adhesion was not explained nor was there evidence of the gut having been opened. In case 4, the conclusion of typhoid was apparently arrived at by the peritonitis and perforation, but no description of the ulcer was given. Case 10, was the stab wound case while case 14, was the only instance in which the Peyer's patches was mentioned. These short-comings were without doubt unavoidable as circumstances probably did not permit even partial autopsies on body regions most suspected according to history, as the seat of the probable cause of death, not to say of a complete postmortem. Nothing conclusive, can therefore, be arrived at with this material.

2. Accordingly, postmortem diagnosis or postmortem opinions as to the cause of death were given in only 4 of the 14 cases. These were case 4, of typhoid, case 10, of wounds, case 13, of malaria and case 14 of tuberculosis. However, the fact that spleens were sectioned in all cases except one (typhoid case) with section of some of the other organs, their histo-pathologic study might give some clues if not on the possible relation of malaria with these deaths, at least on the presence of pigmentation or parasites.

Malaria, acute or chronic, is characterized by the deposition of dark brown or black intravascular pigment, the *hemozoin*, secreted by the parasites and which gives the dark "slate" color to the spleen and liver. This pigment is different from *hemosiderin* which is an iron pigment, yellow in color and deposited in tissues in affections with blood destruction as in malaria and other conditions. This pigment is insoluble in alkalis and positive for iron while the hemozoin reaction is just the opposite.

#### HISTOPATHOLOGIC FINDINGS

**Case 1.**—Spleen shows congestion and focal necrosis; no pigments.

**Case 2.**—Acute interstitial hepatitis; acute splenitis with diffused polymorphonuclear infiltration; no pigments.

**Case 3.**—Congestion of the spleen with polymorphonuclear infiltration; no pigment; appendix with post-mortem changes of the mucosa.

**Case 4.**—No slides.

**Case 5.**—Tubular (acute parenchymatous) nephritis; pulmonary oedema; lobar pneumonia spleen with some pigments.

**Case 6.**—Acute splenitis on a chronic spleen; acute parenchymatous nephritis; little pigment present.

**Case 7.**—Acute splenitis with pigments, also present in the liver.

**Case 8.**—Fatty liver; acute splenitis; little pigment present.

**Case 9.**—Bacterial thrombi in the spleen, without pigments; bacterial thrombi in the kidney, with localized tubular nephritis and millary abscess.

**Case 10.**—Small areas of chronic pneumonitis; some tubular nephritis; acute hepatitis with hemorrhage; fibrin deposits and leucocytic infiltration; heart apparently normal; spleen shows chronic inflammation without pigmentation.

**Case 11.**—Chronic tuberculosis of the intestines; adrenal apparently normal; kidney decomposed; chronic splenitis with millary tuberculosis, without pigment; lymphnode with chronic millary tuberculosis.

**Case 12.**—Adrenal with lymphocytic infiltration; uterus with myometritis and remnants of the decidua (post partum) chronic splenitis with polymorphonuclear infiltration and some pigment; acute diffused nephritis (parenchymatous and interstitial); adrenal apparently normal; acute hepahitis.

**Case 13.**—Pulmonary infarcts; fibrosis of the lungs with accumulation of large bacilli probably post-mortem; heart showed

post-mortem fragmentation of the fibers; kidney, liver, and intestines show post-mortem decomposition; chronic splenitis without pigmentation.

**Case 14.**—Liver with fatty infiltration and chronic cholangitis; kidney shows post-mortem decomposition; heart shows post-mortem fragmentation of the fibers; chronic millary tuberculosis of the spleen (with some pigment), intestines, liver, lungs and appendix.

#### COMMENTS ON THE CAUSES OF DEATH

Taking post mortem and histological evidences into account, the cases may be commented on as follows:

**Case 1.**—Could have died of brain, heart, lung or intestinal disease. No post-mortem diagnosis. No pigment in the spleen—malaria eliminated.

**Case 2.**—Could have died of brain or intestinal disease. No post-mortem diagnosis. No pigment in the spleen.

**Case 3.**—Could have died of brain, heart, lungs or intestinal disease. Adhesion of intestine mentioned, but the nature was not determined. No post-mortem diagnosis. No pigment in the spleen.

**Case 4.**—No slides. Diagnosed post mortem as typhoid with perforation and peritonitis.

**Case 5.**—Apparently a case of lobar pneumonia. No post-mortem diagnosis. Spleen with some pigment.

**Case 6.**—Could have died of brain, heart, lungs or intestinal disease. The last organ was described as apparently O. K., which I take as a superficial examination. Little pigmentation present in the spleen. No postmortem diagnosis. If this were death due to malaria, heavy pigmentation and parasites should be encountered.

**Case 7.**—Could have died of brain, heart, lung or intestinal disease. No post-mortem diagnosis. Spleen and liver with considerable pigmentation characteristic of malaria.

**Case 8.**—Could have died of brain, heart, lungs or intestinal disease. No post-mortem diagnosis. Little pigmentation in the spleen present.

**Case 9.**—Apparently a case of pyonephrosis according to histologic findings. Still, possible death could have been due to brain, lung or heart disease. Intestine stated to be apparently O. K., which I take as a superficial impression, but not opened. No post-mortem diagnosis. No pigment in the spleen.

**Case 10.**—A clear case of death due to wounds, according to post-mortem diagnosis. No pigmentation of the spleen.

**Case 11.**—Histologically there was generalized chronic millary tuberculosis but the brain nor thorax were not examined. No post-mortem diagnosis. No pigmentation of the spleen.

**Case 12.**—A postpartum metritis was evident histologically but brain, lung, heart and intestine were not examined. No post-mortem diagnosis. Pigment present in the spleen.

**Case 13.**—Pulmonary infarction evident histologically, but brain and intestine were not examined. Post-mortem diagnosis splenitis acute?, hyperplastic, malarial—no pigmentation seen in spleen. Can not be malaria.

**Case 14.**—A clear case of pulmonary tuberculosis as diagnosed post-mortem and supported histologically. Spleen shows pigmentation.

Granting that all pigmentations found were malarious, acute or chronic as they were mostly dark brown or black, then malaria was absent in 7 (Cases 1, 2, 3, 9, 10, 1, and 13) out of 13 whose spleens were examined histologically or 54 per cent, and present in 6 (Cases 5, 6, 7, 8, 12, and 14) or 46 per cent. Post-mortem opinion in 6 spleen pigmentated cases was given in only one case (case 14 of pulmonary tuberculosis). In two cases (cases 6 and 8) both the post-mortem protocols and histologic findings could give no clue as to the cause of death. Case 7, with black pigmentation in the spleen and liver is the only case suspiciously malaria, but failure to examine the lungs and intestine has eliminated the finding of two of the most common causes of death in a child of two years, broncho-pneumonia and entero-colitis. Case 5, was a probable death due to lobar pneumonia, while case 12 could be a post-partum death though the thorax and intestine were not examined.

#### SUMMARY CONCLUSION

1. In a publication by Tiedeman, it was cited that of 14 post-mortems on reported malaria deaths, 5 or 35.7 per cent were found to be actually due to malaria, while the rest although due to various other causes, yet likewise showed certain post-malarial lesions. These post mortems were performed by Dr. R. Padua of the Philippine Health Service whose reports were the basis of Mr. Tiedeman's statements.



2. Certain findings in the recent surveys by the newly created Malaria Section of the Philippine Health Service lead the writer to study the materials of Doctor Padua with the following results:

(a) The post mortems were performed in the homes and were therefore very incomplete; the protocol were necessarily the same and not amenable to other interpretations.

(b) Post-mortem opinions as to the cause of death were given on only four cases (1 case of typhoid, 1 case of wounds, 1 case of malaria and 1 case of tuberculosis).

(c) Pigmentation of the spleen detected microscopically was present in 6 out of 13 cases or 46 per cent.

(d) Of these 6 cases in only one case (case 7) could malaria be implicated as a cause of death, although death could have been due to brain, heart, lung or intestinal disease, these organs having not been examined. The failure to examine the lungs and intestines eliminated the two most common seats of the cause of death in a child of 2 years.

3. From the analysis of the materials on hand, it is concluded that the statements of Tiedeman and Padua were unjustified, as not even one case could be positively confirmed by autopsy and histological examinations as a malaria death.

### FACTORY FOR TIKI-TIKI PROPOSED

A bill drafted by the Bureau of Science, setting aside an appropriation of ₱60,000 for the purchase of machines and the erection of a factory building was introduced in the last Legislature. The Bureau of Science urgently needs a factory exclusively for tiki-tiki extract.

Formerly, the bureau made a monthly average of 5,000 bottle of tiki-tiki extract and distributed it to the Philippine General Hospital, The Philippine Health Service and the Public Welfare Commissioner. At present this amount can not be produced for lack of machines and a building.

### ANTI-MOSQUITO COMMITTEE FORMED

A committee composed of 28 members to take charge of the community effort initiated by the Manila Rotary Club to control the mosquito pest in the city of Manila, was appointed by Acting Governor-General Gilmore.

Those appointed were: E. A. Perkins, Major Parker Hitchins, Gregorio Perfecto, Lieut. Colonel Herbert C. Gibner, Lieut. Commander J. E. Miller, Colonel B. J. Valdez, Dr. Jacobo Fajardo, Dr. C. F. Moriarty, Santiago Artiaga, Vienvenido A. Tan, Colonel John W. Green, H. A. Bordner, Felicisimo Feria, Dr. George W. Wright, A. S. Macfarlane, Roy C. Bennett, Alejandro Roces, Vicente Madrigal, William J. Shaw, Tomas Earnshaw, Fulgencio Borromeo, Juan Posadas, jr., Albino Sy Cip, H. P. Jollye, Andres Soriano, Charles A. Johns, and F. B. Ingersoll.

### JOHNS FIGHTS WITH MOSQUITO

The following is the speech given by Justice Charles H. Johns, chairman of the Anti-Mosquito Executive Committee, over the radio in his appeal to the public to fight the mosquito.

*"To the people in and around Manila:*

"The mosquito is a very tiny insect, but even so it is the primary cause of more sickness and distress in the Philippine Islands than all other insects combined. Thousands and thousands of pesos spent by the people in and around Manila to destroy mosquitoes, but very little is expended to stop their breed and to remove the cause of their existence. By nature Manila is a very healthy city. But by a conservative estimate, the mosquito is primarily responsible for at least forty per cent of all the sickness in and around its corporate limits. If one-half of the money which is spent by the people to destroy mosquitoes after they are bred was judiciously expended to remove their cause and to stop their breed a saving of at least the other half, we would have very few mosquitoes, and there would be a very marked improvement in the general health of the community. To get results public opinion must be aroused, and there should be unity of purpose and a concert of action. To accomplish that the committee on the drive against mosquitoes as now organized. The work has been divided and strong subcommittees have been appointed for each division,

all of which are more or less important, and some of which will require much time, careful study, and a lot of hard work. We have the hearty coöperation of the Acting Governor-General, of all branches of the Government, including the City of Manila, the Bureau of Health, the chief of police, superintendent of schools, and the Boy Scouts. In addition, we will have the valuable advice, aid and assistance of the Rockefeller Foundation. From necessity some money will be required, but not any large amount. We assure the public that all funds received will be judiciously expended for the good of the Committee will be paid or receive any compensation for his services. We are all behind this movement for the sole purpose of rendering service for the good of the public. If you have mosquitoes, it is either your own fault or because of your environment, or it may be both. For such reasons, we make an earnest appeal to every one to aid and assist in the removal of the cause. It has been done in other countries, and, through a united effort, it can be done in this. It is an economic measure. In the end money will be saved, and there will be a marked improvement in the general health.

"There should be a general cleaning, draining and repairing of roof gutters. Unused bottles, barrels, pails, bamboo stumps, vases and cups should be emptied and cleansed out, and all dirt and filth removed. All empty tin cans should be buried. Cisterns or pockets in trees and holes on water tanks in ground depressions ornamental fountains and artificial tanks should be thoroughly examined. All tall grasses should be cut low. Keep the grass low. In short, there should be a general cleaning up in the premises to destroy and remove all places where mosquitoes breed. It should be remembered that they do not breed on premises which are not sanitary, and, particularly, in stagnant water.

"The committee makes an earnest appeal to all the residents throughout the entire district to aid and assist in removing the cause for the existence of mosquitoes, and assures you in good faith that it will make an honest and sincere effort to aid and assist in the work. As to the residence, it is largely a matter of education, and to insure success, there must be mutual coöperation. You have no cause to complain against your neighbor, if you are guilty of the same offense, but you do have cause for complaint, if your premises are sanitary and his are not.

"Sooner or later your premises may be visited by a sanitary officer, a policeman or a boy scout. If so, treat them kindly, give them all information, and assist them to find out and remove the cause for mosquitoes. That is a very easy thing for you to do, and will be for your own benefit. If your children should bring home from school leaflets about mosquitoes, study them with care. They will be free of charge and full if good, sound, expert advice, and, if followed, will do much to rid your place of mosquitoes.

"So much for the residential sections roughly estimated to be responsible for about fifty per cent of all mosquitoes.

"Bills are now pending in the legislature designed to authorize and empower the city to fill in the low lands which when completed will remove the cause for the other fifty per cent. Your Committee feels confident that the pending Legislature will enact all necessary laws for that purpose. A forcible example of what that will accomplish is seen in the present campus of the University which, four years ago, was one of the worst places in the City for the breeding of mosquitoes. To make such fills of all of

the lowlands will require much time and involve a large expense. But even so, the property owner will be fully compensated by the increased value of his property, and he has no legal right to keep and maintain his property in such a condition as to endanger life and the general health of the public. The making of the fills on a large scale can be done very much cheaper than under the present method. But where they have been made, even with the present facilities, the expense has been fully justified by the increase in value. Our Committee has and feels a keen interest in the growth, progress, and public health of the City of Manila and its environments, which is the sole object to be accomplished. With the Manila Bay on its front and its mountains in the back ground, Manila should be made a very healthy and beautiful city and become the pride of the Orient. To that end and for that purpose, we earnestly appeal to you for your assistance and loyal support.

"This is the message of the Executive Committee of the Mosquito Club.

#### **DRUG STORES RAIDED**

Many Manila drugstores were raided by the members of the Board of Pharmaceutical Examiners and three of them were placed in the black list. The raid was conducted following the request of the Philippine Health Service for strict enforcement of the rules governing pharmaceutical practice in the sale of drugs. The raids will be resumed from time to time.

This ruling was made at the request of the Philippine Health Service to prohibit the sale of advertised chemical compositions that were found adulterated. The quack doctors in the barrios are able to play their trade on account of the extensive advertisement that is given to many patent drugs and medicines, thereby undermining the health of many people, besides robbing them of their money, it was said.

# REPORT OF THE TYPHOID SITUATION IN MANILA DURING 1924

By THE COMMITTEE ON TYPHOID INVESTIGATION

*Philippine Health Service*

- I. Introduction.
- II. Present status as compared with the past.
  1. Morbidity.
  2. Mortality.
  3. Fatality.
- III. Notification and diagnosis.
  1. Serological.
  2. Cultural.
  3. Pathological.
- IV. Prevalence.
  1. Age and sex incidence.
  2. Occupation and nationality.
  3. Seasonal variation.
  4. Geographical distribution.
- V. Probable sources of infection.
  1. Water.
  2. Sewage disposal.
  3. Foods and drinks.
  4. Flies.
  5. Sanitary condition.
  6. Contacts—cases and carriers.
- VI. Methods of control.
- VII. Summary and conclusion.
- VIII. Recommendations.

## INTRODUCTION

Under paragraphs 21, 22, and 23 of Special Order No. 7 of the Director of Health, P. H. S., dated July 8, 1924, as amended by paragraph 7 of Special Order No. 8, dated August 4, 1924, which are hereunder transcribed, the Committee on Typhoid Investigation, with the valuable aid and kind advices of Dr. G. R. Lacy of the Bureau of Science and Col. J. F. Siler of the Army Medical Research Board, made a detailed study of the typhoid situation in the city during the year 1924, the results of which are briefly recorded in this report.

## PHILIPPINE HEALTH SERVICE

MANILA, July 8, 1924

SPECIAL ORDER }  
No. 7 }

PARAGRAPH 21. Senior Medical Inspector Leoncio Lopez-Rizal Medical Inspector Regino G. Padua, Senior Surgeon Manuel V. Arguelles, Surgeon Francisco Gomez, and Intern Faustino Estella of San Lazaro Hospital are hereby constituted a Committee to make a detailed investigation of the typhoid situation in Manila from all angles with a view to the adoption, later, of additional measures of control. Senior Medical Inspector Leoncio Lopez-Rizal will act as Chairman and Dr. Faustino Estella the Secretary of the Committee.

Par. 22. Dr. G. R. Lacy of the Bureau of Science and Colonel J. F. Siler of the Army Medical Research Board have consented to aid and advise with this Committee with special reference to the Laboratory phases of the investigation.

Par. 23. The Committee will, at the termination of the work, submit a report of the findings and recommendations to the Director of Health.

Special Order No. 3, under date of March 18, 1924, and all others to the contrary are hereby abrogated.

V. DE JESUS

*Director of Health*

By (Sgd.) J. P. BANTUG

*Acting Executive Officer*

Two members of the Committee were incharge of following up the cases in houses and hospitals where the patients were confined, taking their clinical and epidemiological histories, and making from time to time such observation as to establish an accurate clinical diagnosis. Two other members were detailed to secure the blood of doubtful cases for haemoculture and widal test, and feces and urine specimens for the isolation of the typhoid and paratyphoid organism. Most of this laboratory phase of the investigation was worked out in the Bureau of Science. One member was incharge of the necropsies and other post mortem diagnosis work. The autopsies were performed with the consent of the family at the Morgue of San Lazaro Hospital and only on those bodies which were in life diagnosed as typhoid suspects.

A total of 737 cases were investigated clinically and epidemiologically, 265 for haemoculture, and 379 feces and 198 urine specimens for the isolation of the etiological agent. In this connection, it must be stated that haemoculture was not usually done when the serological reaction resulted positive in unvaccinated patients. There were 45 autopsies performed during the course of the investigation.

Thus, the typhoid incidence during the year was studied from all possible angles. When the cases were reported to the health authorities either by telephone or by the usual notification card, they were followed up to their termination or until such time as the diagnosis was confirmed or established. With the above-cited data, it is believed that fairly representative samples were at hand to make a thorough study from an epidemiological standpoint.

We sincerely appreciate the valuable help rendered us by Dr. E. Hernando, Chief of the Division of Metropolitan Sanitation, and by Mr. M. Mañosa, Chief of the Division of Sanitary Engineering, both of this Service, in the calculations of population using the different kinds of drinking water and the various sewage disposal systems. We are indebted particularly to the Chiefs of Hospitals in the city for permitting us to get the data, from actual patients, needed in this study; and to the private practitioners in the city, we owe thanks for their ready and speedy coöperation in the reporting of cases, without which the statistical informations used in this report would not have been completed.

#### PRESENT STATUS

The typhoid situation during 1924 has been, on the whole, better than during the last two years. In fact, if the morbidity and mortality rates during 1924 are both considered as being normal or 100 per cent under present conditions, those of 1923, were, respectively, 143.42 per cent and 127.29 per cent. In other words, the morbidity and mortality rates in 1923 were, respectively, 43.42 per cent and 27.29 per cent higher than those in 1924. Similarly, such rates in 1922 were, respectively, 78.14 per cent and 56.29 per cent higher than in 1924, and 24.20 per cent and 22.78 per cent over those in 1923. With the methods of control employed by the Service, therefore, the annual incidence and death-rates from typhoid were, beginning with 1922, reduced from year to year, their mean values from that year per month being, respectively,  $329.17 \pm 13.27$  and  $87.72 \pm 3.41$  per 100,000 population. These facts are shown in Tables I and II:

TABLE I.—Showing the annual morbidity and mortality rates per 100,000 population from typhoid fever occurring among residents in the City of Manila, by months.<sup>1</sup>

Months	1919		1920		1921		1922		1923		Average of 5 years		1924	
	Mor- bidity	Mor- tality	Mor- bidity	Mor- tality	Mor- bidity	Mor- tality	Mor- bidity	Mor- tality	Mor- bidity	Mor- tality	Mor- bidity	Mor- tality	Mor- bidity	Mor- tality
January.....	192.09	54.29	82.33	24.70	247.61	101.40	284.33	128.11	592.33	157.96	282.52	94.17	237.65	85.71
February.....	175.38	59.46	53.52	16.47	170.49	30.53	524.43	152.12	513.36	102.67	250.64	73.88	268.82	54.54
March.....	221.32	87.69	44.68	41.17	190.78	73.07	896.73	240.20	442.28	114.52	372.63	112.03	241.55	77.92
April.....	196.26	66.81	53.52	28.82	300.38	89.30	724.59	148.12	355.40	94.77	328.79	86.05	276.61	66.23
May.....	171.21	58.46	115.27	37.05	162.37	97.42	444.36	108.09	308.01	63.18	241.93	73.07	272.72	109.09
June.....	175.38	83.52	160.55	82.33	202.96	64.95	416.34	124.10	221.14	55.20	236.24	82.00	288.30	70.13
July.....	167.03	45.93	247.00	107.03	194.84	60.89	352.29	42.04	280.37	63.18	249.23	65.76	198.69	54.54
August.....	160.33	91.87	325.22	185.25	223.26	69.01	352.29	60.05	327.76	90.82	276.84	99.04	284.41	85.71
September.....	167.03	58.46	185.25	78.22	280.08	69.01	292.24	64.05	272.47	82.93	240.30	70.63	209.59	58.43
October.....	121.10	70.99	197.60	102.22	267.91	89.30	328.27	80.07	243.78	78.98	233.81	84.43	214.28	50.65
November.....	141.98	45.93	279.93	102.32	211.00	60.89	312.26	72.06	284.32	67.13	246.80	69.82	229.86	58.44
December.....	116.92	33.41	325.22	163.55	292.26	77.12	256.21	80.07	327.76	94.77	264.66	89.30	194.80	66.23
Total.....	166.34	62.98	176.67	80.62	228.67	74.08	432.02	109.09	347.83	88.85	272.03	83.35	242.52	69.80

<sup>1</sup> Graphically illustrated by charts I and II.



TABLE II.—*Showing the chief constants of variation in morbidity rates by month per 100,000 population from typhoid fever among residents in the city during the last three years ending December, 1924.*

Rates	Mean	Standard deviation	Coefficient of variation
Morbidity.....	329.17 ± 13.27	118.07 ± 9.38	35.87 ± 3.20
Mortality.....	87.72 ± 3.41	30.38 ± 2.41	34.63 ± 3.06

The relatively low incidence and death-rates in 1919 and 1920 probably resulted from the faulty notification of cases and deaths from the disease. In fact, this faulty notification and diagnosis of the cases previous to the year 1922 might have been the one if not the chief cause of the great discrepancy occurring in the percentage of deaths per 100 cases. In none previous to that year, has the case fatality been lower than 32 per cent while from 1922 to 1924 inclusive, such did not go up higher than 29 per cent. The latter ratio is still high since in the United States it has been asserted that a mortality rate (per 100? cases) over 20 per cent may be regarded an exception and not the rule.

#### NOTIFICATION AND DIAGNOSIS

Since 1921, the notification and diagnosis of the cases has improved. More active coöperation has been obtained from medical practitioners and institutions in reporting to the health authorities of typhoid cases and deaths. Public health education has also been an important factor in getting good results in this endeavor. The defective notification, prior to that year, may be shown by a careful analysis of the following measurements of variation:

TABLE III.—*Showing the chief variation constants in the number of reported typhoid cases per week and per month according to specification*

Year	Specification	Mean	Standard deviation	Coefficient of variation
1924.....	No. of cases per week.....	14.71 ± 0.46	4.94 ± 0.33	33.60 ± 2.46
1919 to 1923 inclusive.	No. of cases per month.....	62.00 ± 2.14	24.63 ± 1.52	39.72 ± 2.81

In other words, the approximate number of cases reported per week during the last five years ending December, 1923, was 14.31 in spite of the epidemic that occurred in 1922 and 1923, as against 14.71 in 1924. This indicates that the cases during the pre-epidemic years, viz.: 1919 and 1920 and perhaps 1921 also have not all been reported to the health authorities.

Going back further, the number of deaths reported per month similarly shows a great deal of variation which in part may reasonably be explained by faulty diagnosis. This is illustrated by Chart III and by the next table:

TABLE IV.—*Showing the chief variation constants in the number of reported typhoid deaths per month during five-year periods*

Year periods	Mean	Standard deviation	Coefficient of variation
1910 to 1914 inclusive.....	5.47 ± 0.26	3.02 ± 0.19	55.28 ± 3.90
1915 to 1919 inclusive.....	12.30 ± 0.58	6.65 ± 0.41	53.16 ± 4.09
1920 to 1924 inclusive.....	20.70 ± 0.74	8.53 ± 0.52	41.19 ± 2.93
1910 to 1924 inclusive.....	12.82 ± 0.45	8.99 ± 0.32	70.11 ± 3.51

But, beginning 1921, the mean values in the number of reported cases per month do not seem to show great discrepancies except during the epidemic years of 1922 and 1923. Thus:

TABLE V.—*Showing the chief variation constants in the number of typhoid cases reported per month*

Year	Mean	Standard deviation	Coefficient of variation
1921 to 1923 inclusive.....	75.56 ± 2.12	18.83 ± 1.50	24.92 ± 2.10
1922 to 1924 inclusive.....	77.36 ± 1.86	16.56 ± 1.32	21.41 ± 1.78
1922 to 1923 inclusive.....	84.58 ± 2.05	14.92 ± 1.45	17.64 ± 1.77

The endemic typhoid in 1921 has lessened the mean value in the number of reported cases per month during 1922 and 1923 to  $9.02 \pm 2.95$  points, while that in 1924 to  $7.22 \pm 2.76$ . In other words, there was no material difference between the mean values in the reported number of cases per month during 1921 from that during 1924, having regard to the probable error involved. Hence, the incidence of typhoid during 1924 has been practically the same as that in 1921, which under existing conditions and circumstances, might be considered, at the time, normal in the city.

Out of 745 cases with 215 deaths reported in 1924, 736 were investigated and were reported as having had their onset during the year. Of the 745 cases, 8.03 per cent were not reported while they were yet alive. It may not be amiss to state, in this connection, that of the cases reported as typhoid, about 85 per cent to 90 per cent were confirmed by either clinical or laboratory methods, thus leaving a relatively small margin of possible error.

The laboratory examination of the blood specimens taken from the cases gave the following positive results: Widal reaction

37.74 per cent and hæmoculture 45.48 per cent. Of those examined for the hæmoculture, positive finding was obtained in the proportion of 54.26 per cent among cases in which the blood was taken within the first two weeks of the disease, 36.17 per cent within the next two weeks, and 9.57 per cent among those in which the stage of the disease was undetermined.

The isolation of the specific organism from the stool was positive in 5.54 per cent of the cases and from the urine in 1.01 per cent and, at autopsy, positive lesions were found in 40 per cent of those who died as typhoid suspects; in other words, 60 per cent of them showed lesions other than those of typhoid. The post-mortem diagnoses were confirmed by histological examination of the tissues and by the isolation of the typhoid organism from the spleen and gall bladder.

### PREVALENCE

#### AGE AND SEX INCIDENCE

Over 75 per cent of the cases occurred in the second and third decades of life. Specifically the distribution by age was as follows: in the first decade 8.43 per cent, in the second decade 40.70 per cent, in the third 35.88 per cent, in the fourth 10.98 per cent, in the fifth 2.14 per cent, and in the sixth decade and over 1.87 per cent. These do not very materially differ from the findings of the previous committee (Monthly Bulletin, P. H. S., October and December, 1922, p. 307) except that they found that less than 70 per cent of the cases occurred in the second and third decades and more than 10 per cent in the first.

The prevalence of the disease in the second and third decades of life may be better appreciated by the age-specific incidence rate as may be seen in the following table and as graphically illustrated in Chart IV:

TABLE VI.—*Showing age-specific incidence rates, per 100,000, from typhoid fever in the city during 1924*

Age group	Population <sup>1</sup>	No. of cases	Morbidity rate
0-10.....	75,214	63	83.76
11-20.....	70,421	303	430.27
21-30.....	68,569	267	389.39
31-40.....	41,781	82	196.26
41-50.....	27,924	16	57.30
51 and over.....	24,101	14	58.09
Total for all ages.....	308,010	745	241.87

<sup>1</sup> Estimated in proportion to the age distribution of the population in 1918 Census.

From an epidemiological standpoint and for the purposes of this investigation, the sex incidence is not significant. However, it may be stated that 63.49 per cent of the cases and 61.86 per cent of the deaths were males.

#### OCCUPATION AND NATIONALITY

More than half of the case that occurred during the year were students and laborers; 25.65 per cent were of the former and 26.06 per cent were of the latter class. Cases belonging to the class of food handlers occurred in the proportion of 22.92 per cent; of merchants, Government employees, and professional men 17.60 per cent; and of undetermined occupation 7.78 per cent.

Filipino cases occurred in the proportion of 91.52 per cent, Chinese 4.51 per cent, Spaniards 0.41 per cent, American 0.27 per cent, other Europeans 0.14 per cent, and all others 3.15 per cent. In terms of population, 237.44 per 100,000 were among the Filipinos, 184.81 were among the Chinese, 153.45 among the Spaniards, 88.81 among other Europeans, 63.82 among Americans, and 1,052.15 among all other nationalities. In this connection, it may be stated that paratyphoid "A" fever occurred in the proportion of about 80 per cent of the cases among the foreigners, especially the Japanese.

#### SEASONAL VARIATION

During the last five years ending December, 1923, the curve of incidence had its peak in the first quarter, while in the year 1924, it fell in the second quarter. The outbreaks during the months of March and April in 1922 and 1923 may in part explain the high incidence rate during the first quarter of the last five years.

TABLE VII.—*Showing the percentage seasonal distribution of the cases and deaths from typhoid fever*<sup>1</sup>

Quarters of the year	Average 5 years ending 1923		1924	
	Cases No. = 80,42	Deaths No. = 246.4	Cases No. = 745	Deaths No. = 215
First.....	28.97	28.00	25.64	26.05
Second.....	24.72	24.11	28.86	29.30
Third.....	23.48	23.54	23.62	23.72
Fourth.....	22.83	24.35	21.88	20.93

<sup>1</sup> Graphically shown in Chart V.

It may, therefore, be inferred that under prevailing conditions—such as existed during 1924—the disease was, on the whole, more or less prevalent during the hot season of the year.

## GEOGRAPHICAL DISTRIBUTION

Practically the same age and seasonal incidence was observed in the different health districts of the city. However, the incidence rate of all ages and all sexes in Intramuros was 279.89 per 100,000 population, in Meisic 206.63, in Sampaloc 282.05, in Tondo 228.98, and in Paco 281.98, against 241.87 in the whole City of Manila.

## PROBABLE SOURCE OF INFECTION

## WATER

The water used for drinking purposes in the city came from two main sources of supply, viz.: the city water from the Montalban source and the artesian water from various wells. Taking into consideration the kind of drinking water used for one month before the onset, the cases were distributed as follows: 55.74 per cent had been using city water for drinking purposes, 36.75 per cent artesian, 4.23 per cent city and artesian combined, 3.14 per cent other sources, and 0.14 per cent water of undetermined source. It may seem at first sight that the city water was at fault. But this assumption may not hold true if we take into account that about 60 per cent of the population used city water for drinking. Under that estimate, the incidence rate among those using city water would be 226.73 per 100,000 population, while the rate among those using other than city water was 253.24.

TABLE VIII.—*Showing the bacteriological examination of the city water at different points by months during 1924*

Months	New Reservoir <sup>1</sup>			Sta. Mesa Tap <sup>2</sup>			City Tap <sup>2</sup>		
	Average bacterial count per c. c.	Per cent of positives (10 c. c.)		Average bacterial count per c. c.	Per cent of positives (10 c. c.)		Average bacterial count per c. c.	Per cent of positives (10 c. c.)	
		Pre-sumptive test	Isolation of B. coli		Pre-sumptive test	Isolation of B. coli		Pre-sumptive test	Isolation of B. coli
January.....	242	64.40	22.54	102	25.76	3.22	59	25.76	3.22
February.....	81	62.45	17.25	6	69.00	0	23	62.10	3.45
March.....	113	35.42	0	34	57.74	0	24	51.52	0
April.....	1,442	53.28	0	5,667	33.33	0	68	6.66	0
May.....	2,331	48.30	6.44	348	28.98	0	517	19.32	0
June.....	2,276	89.91	13.32	218	26.64	0	219	53.28	0
July.....	1,678	83.72	3.23	606	22.54	0	103	12.88	0
August.....	807	90.16	0	504	28.98	0	690	9.99	0
September.....	1,061	100.00	0	97	9.99	0	152	16.65	0
October.....	390	90.16	6.44	133	28.98	0	86	22.54	0
November.....	484	86.48	6.66	107	33.33	0	81	23.31	0
December.....	361	64.40	0	40	28.98	0	116	16.10	0

<sup>1</sup> Before chlorination.

<sup>2</sup> After chlorination.

The above data by months do not seem to be in relation with the monthly incidence rate of typhoid fever in the city during the year. This is graphically shown by Charts VI, VII, and VIII. Practically the same observation was made in a previous investigation (Monthly Bulletin, P. H. S., loc. cit.). The conclusion that may be inferred from such finding would be obvious, viz.: that the city water did not greatly influence the incidence of typhoid fever during 1924 in Manila. Moreover, the chlorination of the water at its source has been continued during the year in a proportion of from 0.4 to almost 1.00 part per million and in 1922 and 1923 the incidence was reduced without any material change in the purification system of the water supply.

Neither can it be stated positively that the artesian water has disseminated the typhoid infection in the city. There were in operation 23 artesian wells supplying the city with water for drinking. Two of them were closed in December, 1923, 14 on January, 1924, and 4 in February, leaving only 3 that were permitted to supply water to limited sections of the city. If artesian water was disseminating the infection, the closure of a large majority of them during January, 1924, should have resulted in a lowered incidence rate in February, 1924. This reduction, however, did not occur and the incidence rate in February was higher than for the previous month. Similarly, it is observed that there is no chronological relation between the reopening of these wells, after the structural defects and possible contamination had been remedied, and the monthly incidence of typhoid in the city. For instance, almost half the number of wells closed were reopened between March and the end of June and the other half between July and September inclusive. When in May, 7 of those well were opened, the incidence rate in June became higher; on the other hand, when in August, 6 of them were opened, the incidence rate became lower in September.

Though both the city and the artesian well waters, when freshly taken from the faucet or outlet, do not, in our opinion, have a direct bearing on the dissemination of typhoid in the city, yet their contamination thru careless handling on the part of the water carriers (*cargadores de agua*) and of members of the household who might have been exposed to the infection, was shown to be a probable factor in the transmission of the disease in that examinations of many samples of water thus collected and stored for drinking purposes in *tiendas*, invariably showed

high bacterial counts, all of which were positive for *B. coli*. This was, in a previous investigation, likewise demonstrated by the biological examination of the water in the cans and receptacles used by the water carriers, the specimen having been taken while they were on the way to the consumers.

#### SEWAGE DISPOSAL

The number of cases developed in houses provided with septic tanks is so small (0.41 per cent of the total) that they may be discarded for the purpose of this investigation. Similarly, those with pail system which constitute only 3.83 per cent of the total, may be eliminated in the study. But the cases that used the public midden sheds and the flush closets deserve attention, as they constituted 40.63 per cent and 55.13 per cent respectively of the total.

In order to appreciate the above facts, it was thought advisable to express them in terms of population using the above types of sewage disposal. With the kind aid of the Chief of Metropolitan Sanitation Division and that of the Sanitary Engineer of this Service, the population using each type was calculated. It was ascertained that about 147,854 residents of the city used the sanitary flush closets, 91,956 the public midden shed, 49,200 the pail system and 19,000, the septic tanks. In other words, 48.00 per cent of the population of Manila used flush closets, 29.85 per cent public midden shed, 15.97 per cent pail system, and 5.17 per cent septic tanks. That being the case, the incidence rate per 100,000 population would be 272.56 for flush closets, 322.98 for public closets, 56.91 for pail closets, and 15.78 for septic tanks. The ratio of the percentage of the cases to that of the population are as follows: 1.1485 for the flush closets, 1.3611 for the public midden shed, 0.0664 for septic tanks, and 0.0240 for pail system.

It may then be inferred that there occurred relatively more cases among those using public closets in terms of population belonging to that group than those who used the sanitary system of waste disposal. To explain the high incidence among population using flush closets, it should be borne in mind that in districts provided with sanitary sewerage, the density of population, the overcrowding in tenement houses, which was relatively more than elsewhere, might have a bearing upon the transmission of the disease thru contact. In those sections of the city provided with public midden sheds where the population

was less dense, the chance of infection might have been enhanced by the prevalence of flies. This will again be referred to later.

#### FOOD AND DRINKS

A comparatively small proportion of the population drinks fresh milk. Canned milk is mostly employed and mixed with coffee, tea, or in making ice-cream in houses. In fact, only about 6.55 per cent of the typhoid cases gave a history of having drunk fresh milk, and 70.67 per cent used canned milk, while no milk was used in 22.78 per cent of the cases. Moreover, if the milk was taken alone, it was usually boiled beforehand.

A proportion of 40.60 per cent of the cases had taken ice-cream from street peddlers, 23.98 per cent from public places, 2.59 per cent made at home, and the remaining 32.83 per cent gave no history of having had ice-cream before the onset of the disease. Although there appears a relatively high proportion of cases that had taken ice-cream, yet the latter in itself is not considered a main factor in the propagation of typhoid fever except thru subsequent contamination due to improper handling and distribution. In the interpretation of the above figures, it must be borne in mind that the preparation of ice-cream was permitted only in limited places under the supervision and control of the health authorities and that the biological examination of samples of ice-cream, made immediately after preparation, showed low count and negative contamination as indicated by the finding of *B. coli*.

Similarly, only 28.96 per cent of the cases had eaten in public restaurants leaving 71.04 per cent without history of having taken their meals in those places. Of all the cases investigated, only 13.66 per cent had eaten oysters, most of which, before consumption, were submerged in boiling water. Raw vegetables were ingested by 11.28 per cent of the cases under investigation, cooked ones by 84.78, and no vegetables by 3.94 per cent.

#### FLIES

The epidemiological notes indicate that 95.48 per cent of the cases occurred in houses where there were few or numerous flies against 4.51 per cent in those where flies were said to be absent. These agents undoubtedly constitute one of the factors concerned in the transmission of the infection in unsanitary localities.

If it be admitted that where flies are numerous the general sanitation is poor, the prevalence of the disease in less populated



areas might be explained partly in relation to such unsanitary surrounding, not to say less of the unsanitary habit of living among the inhabitants therein.

#### SANITARY CONDITION

It is quite difficult if not impossible to classify the population as living in excellent, good, fair, and poor environment. In fact, the classification as regards the degree of sanitary condition seems rather relative depending upon the judgment of the investigator. However, it can be safely admitted that the disease was comparatively more prevalent in houses where compliance with sanitary requirements was lax. This is shown by the fact that only 0.55 of the cases occurred in houses where the premises were classified as excellent, 11.76 per cent in houses and premises classified as good, and 87.69 per cent in those determined as fair and poor.

It would not be amiss to repeat as a factor, in this connection, the overcrowding that exists in many homes of several districts of the city. In fact, unsanitary condition has almost always been found hand in hand with excessive overcrowding which played an important rôle in the transmission of the disease by contact, taking into consideration that cases were not usually isolated earlier than in the second or third week of the disease.

#### CONTACT

Most of the cases contracted the disease in the city as only 18.99 per cent gave a history of having absented themselves therefrom within one month before the onset. Of the cases investigated, approximately 17.35 per cent gave a history of having been in direct contact, within the incubation period, with actual typhoid cases.

As has been said, contact infection has probably played as greater influence in the transmission of the disease in houses provided with sanitary facilities because of the inevitable overcrowding. In the study of the cases of the year 1924, the relative frequency of occurrence of infection not only in the same house but also in the same vicinity is striking and illustrative. In this investigation, the cases of typhoid fever that occurred among residents of the city within the years 1922, 1923, and 1924, have been studied in more detail. Accordingly, the location of each case has been carefully studied in relation with all and every case occurring in and around the same house or vicinity. This study revealed the fact that there were 188 pre-

sumptive foci of infection during 1924. Around these foci, there could be traced an aggregate of 399 or 53.29 per cent of the cases as having had possible contact, either directly or otherwise. A great majority of them were in the neighborhood of stables where flies were prevalent. During the years 1922 and 1923, 679 cases representing 28.87 per cent of the investigated cases apparently acquired the infection thru contact around the same 188 foci. Furthermore, in each of 226 houses, there occurred 2 or more cases within the last 3 years. The following table illustrates the above facts:

TABLE IX.—*Showing the number of typhoid cases found in certain places of the city considered as presumptive foci of infection*

Focus No.	Location Street and house number	Cases registered			Total
		1922	1923	1924	
2	Aceiteros—From 510 to 515	3	3	3	9
8	Anacleto—From 1333 to 1362	2	3	1	6
10	Anak ng Bayan—From 1000 to 1051	7	5	1	13
11	Anda—From 131 to 152	3	3	2	8
13	Andalucia—From 1311 to 1342	3	2	1	6
14	Antonio Rivera—From 100 to 1071	2	2	6	10
15	Asuncion—From 513 to 563	2	2	3	7
16	Asuncion—From 303 to 360	6	2	5	13
19	Benavides—From 1000 to 1029	1	0	0	1
24	Caballeros—From 319 to 329	3	2	2	7
25	Cabildo—From 311 to 391	1	3	2	6
26	Cabildo—From 203 to 267	5	3	1	9
30	Dagupan—From 1208 to 1273	2	4	2	8
32	Dapitan—From 10 to 35	3	1	2	6
35	Echagüe—From 711 to 724	3	1	2	6
38	El Dorado—From 106 to 116	3	1	3	7
39	El Dorado—From 406 to 441	2	1	3	6
42	Felix Huertas—From 1330 to 1374	1	0	6	7
43	Felix Huertas—From 1806 to 1880	0	3	3	6
48	General Luna—From 210 to 270	5	2	1	8
49	Gutierrez—From 120 to 152	2	5	2	9
51	Ilaya—From 831 to 851	2	3	2	7
52	Isabel (Int.)—From 312 to 372	5	1	5	11
53	Isabel—From 412 to 477	5	5	2	12
55	Juan Luna—From 728 to 794	4	3	5	12
57	Juan Luna—From 2307 to 2371	3	5	5	13
58	Juan Luna (int.)—From 1842 to 1880	6	0	2	8
59	Juan Luna (Int.)—From 2208 to 2297	2	6	6	14
67	Legaspi—From 57 to 97	2	1	5	8
68	Lepanto—From 711 to 728	2	3	3	8
69	Leveriza—From 1119 to 1175	3	3	3	9
70	Loreto—From 11 to 96	1	2	4	7
73	M. H. del Pilar—From 1545 to 1571	3	3	2	8
77	Madrid (int.)—From 319 to 352	3	2	1	6
78	Madrid—From 402 to 420	5	0	1	6
79	Magallanes—From 49 to 84	6	4	2	12
80	Magallanes—From 151 to 181	4	2	1	7
81	Magdalena—From 603 to 643	4	1	4	9
83	Magdalena—From 931 to 973	0	2	6	8
84	Magdalena—From 1114 to 1184	6	4	2	12
89	Mayhaligue—From 807 to 827	1	1	4	6
90	Mayhaligue—From 201 to 247	4	1	5	10
91	Misericordia—From 503 to 571	3	7	2	12
96	Novaliches—From 220 to 258	2	3	2	7
100	O'Donnell—From 813 to 884	1	4	1	6
104	P. Gomez—From 512 to 539	3	1	2	6
106	P. Herrera—From 503 to 552	6	1	3	10
109	P. Rada—From 407 to 475	2	4	0	6
110	Palomar—From 110 to 181	1	2	3	6
116	Quesada—From 263 to 289	6	0	1	7
122	Ricafort—From 306 to 347	1	3	2	6
124	Rizal Avenue—From 713 to 719	0	1	5	6

TABLE IX.—*Showing the number of typhoid cases found in certain places of the city considered as presumptive foci of infection—Continued*

Focus No.	Location Street and house number	Cases registered			
		1922	1923	1924	Total
127	Sagat—From 302 to 320	3	4	1	8
128	San Andres—From 1424 to 1489	1	4	1	6
130	San Juan de Letran—From 60 to 96	5	1	5	11
131	San Anton—From 404 to 477	0	3	4	7
134	San Marcelino—From 867 to 832	2	4	1	7
138	Sande—From 1320 to 1364	2	4	2	8
140	Santa Potenciana—From 81	0	5	1	6
144	Sevilla—From 501 to 577	6	5	4	15
145	Singalong—From 1010 to 1094	3	7	5	15
146	Singalong (int.)—From 1208 to 1286	2	8	2	7
147	Singalong—From 1119 to 1174	1	2	3	6
149	Solana—From 213 to 281	8	3	1	12
150	Solana—From 120 to 136	8	4	2	14
152	Soler—From 214 to 257	3	1	2	6
156	Sulucan—From 305 to 388	8	1	1	10
157	Sulucan (int.)—From 726 to 795	1	4	1	6
164	Tayuman—From 101 to 108	1	3	2	6
165	Teresa (int.)—From 5 to 14	2	3	2	7
166	Trabajo—From 904 to 929	2	1	3	6
167	Trabajo—From 603 to 621	2	0	4	6
168	Velasquez—From 890 to 923	4	2	1	7
169	Velasquez—From 732 to 776	7	2	2	11
174	Azcarraga—From 2021 to 2022	0	6	1	7
175	Azcarraga—From 1510 to 1563	6	7	1	14
176	San Marcelino—From 1067 to 1065	3	6	1	10

The above data clearly indicate that the infection has been more or less progressive around many foci in the city and this observation becomes more striking if we consider that convalescents were carriers of the causative agent for several months after the recovery. Besides these, there were "healthy" carriers of the infection scattered throughout the city, the detection of whom remains still a problem to be solved. The proportionate occurrence of carriers in 1922, 1923, and 1924 among contacts, food handlers, convalescents, water carriers, and dead bodies, as determined by stool examination, is as follows:

TABLE X.—*Showing the incidence of typhoid carriers among those examined in the city*

Specification	1922		1923		1924 *	
	Number examined	Per cent positive	Number examined	Per cent positive	Number examined	Per cent positive
Contacts	5,403	0.981	2,897	0.207	1,428	0.070
Food handlers	3,327	1.262	5,345	0.150	2,869	0.035
Convalescents	448	1.339	325	1.231	116	0.862
Water carriers	77	6.493	66	0	0	0
Cases who died of miscellaneous diseases	20	10.000	15	0	1	0

\* Up to and including August.

In other words, during almost three years ending August, 1924, positive typhoid carriers occurred in the proportion of

6.17 per 1,000 of the contacts, 4.42 per 1,000 of the food handlers, 12.37 of the convalescent, 34.96 of the water carriers, and 55.55 of the cases who died of miscellaneous diseases. As far as the above groups of population are concerned, carriers, passing typhoid organism in their stools during the last 3 years, exist in a total of 5.77 per 1,000. These together with actual cases are most likely the probable sources and some of the chief transmitters of typhoid infection in the city. It follows then that, altho the improvement of general sanitation would undoubtedly reduce the incidence of typhoid, yet the problem of eradication will not, it is believed, be completely solved until these carriers are rendered permantly harmless.

#### METHODS OF CONTROL

Approximately 95 per cent of the cases that occurred during the year were hospitalized, the majority in the San Lazaro and Philippine General Hospitals. Hospitalization has been advised in all cases and compulsory in those that did not have facilities for the proper isolation of the patients. Only in instances where the family physician guaranteed the safety of those who came in contact with the patient was the latter allowed to be isolated in the house.

However, general disinfection was enforced in all cases and the families were provided free of charge with disinfectants from the Health Service for hand washing and stool disinfection. The contacts were instructed how to take care of themselves to prevent further infection. Precautionary measures were taken and good nursing given to almost all the cases reported. Convalescents confined in the hospitals were kept there until three negative stool examinations at irregular intervals were obtained. Detected carriers were hospitalized and treated until they were no longer potential sources of infection.

Systematic antityphoid inoculations of the public, but especially the contacts, were continued during the year. A proportion of 17.87 per cent of the cases were those who had received complete series of injections, 18.14 per cent 1 or 2 injections, while 63.98 per cent had none. The immunizing value of the antityphoid vaccine may be shown by the fact that the specific case incidence among those with three injections was 0.65 per 1,000; those with first, second, and third injections taken collectively 1.28; while among the unvaccinated population, the incidence rate was 8.44. Moreover, the case fatality or the proportionate number of deaths per 100 cases among the vaccinated

was not more than 30, while that among the unvaccinated was not less than 27. It should be stated, in this connection, that for the first and second injections, mixed typhoid and cholera vaccine was used, and for the third, pure typhoid and paratyphoid vaccine only.

But, a very interesting phenomenon was observed in the study of the frequency of occurrence of the cases at different times after the last inoculation. It seems as if proportionally fewer number of cases developed one year after the last injection, whether it be first, second, or third. This is illustrated by the following table and by Chart IX.

TABLE XI.—*Showing the percentage distribution of the typhoid cases, in the city during 1924, that were previously inoculated, by dates of onset from the last injection.*

Inoculation	Onset from last injection								2 years and over
	Under 3 months	3 to under 6 months	6 to under 9 months	9 to under 12 months	12 to under 15 months	15 to under 18 months	18 to under 21 months	21 to under 24 months	
1st, No. = 65.....	27.69	15.38	12.31	13.85	24.62	0	0	0	6.15
2nd, No. = 68.....	25.00	10.29	14.71	16.18	19.12	1.47	0	1.47	11.76
3rd, No. = 131.....	11.45	16.79	26.72	12.21	23.66	0.76	0.76	0	7.63
Total, No. = 264.....	18.94	14.77	20.07	13.64	22.73	0.76	0.38	0.38	8.33

Practically the same phenomenon was observed in the distribution of the cases that occurred in the city during 1923. What this phenomenon is due to, we are not yet in a position to explain; but epidemiologically, it seems that the vaccination affords higher protection within the second year after the last inoculation. The large number of cases reported among persons within the first three months after immunization, might be explained by the fact that most of them were contacts of actual cases. This is, however, not true in cases developing the disease after 3 months from the date of the last inoculation. At any rate, the phenomenon deserves further study.

#### SUMMARY AND CONCLUSION

1. It was ascertained from this study that the morbidity and mortality rates from typhoid fever in the city have been decreasing since 1922, such being, respectively, 242.52 and 69.80 per 100,000 population in 1924. The case fatality from 1922 to 1924 ranged from 25.23 per cent to 28.86 per cent. Previous to 1922, the proportionate number of deaths per 100 cases was relatively higher, showing that the notification of the cases might

have been at fault. Moreover, the mean number of cases reported per week during the last five years ending December 1923 was 14, almost the same as in 1924, in spite of the epidemics of 1922 and 1923. It was also shown that the mean values in the number of reported cases by month during 1921 and 1924 did not present any significant difference, having regard to the probable error involved.

2. Improved notifications was instituted in 1919, and positive results along that line were beginning to be felt in 1921. It may likewise be said that in 1921, improvement in the diagnosis was made. These were intensified in 1924 with the result that there were reported 745 cases with 215 deaths during the year, out of which 736 cases were investigated epidemiologically.

3. Of the reported cases in 1924, about 85 to 90 per cent were confirmed by laboratory methods, with the following positive results: Widal reaction 37.74, heacolulture 54.26 per cent when the blood was taken within the first two weeks of the disease and 36.17 per cent within the next two weeks, leaving 9.57 per cent within the undetermined stage of what appeared clinically to be typhoid. Stool examination was positive in 5.54 per cent of the cases and urine in 1.01 per cent. At autopsy, positive lesions were found in 40 per cent of those who died as typhoid suspects.

4. Over 75 per cent of the cases occurred in the second and third decades of life, the age-specific morbidity rates, respectively, were 430.27 and 389.39 against the average of 241.87 per 100,000. The sex incidence was unimportant, altho the majority of the cases and deaths were males.

5. More than 50 per cent of the cases that occurred during 1924 were laborers and students. A proportion of 22.92 per cent of the cases were food handlers; 17.60 per cent merchants, Government employees, and professional men; and 7.78 of undetermined occupation.

6. Over 90 per cent of the cases were Filipinos. The incidence rate among them was 237.44 per 100,000, among the Chinese 184.81, among the Spaniards 153.45, among other Europeans 88.81, and among Americans 63.82. Paratyphoid "A" fever was rather frequent among the foreigners, especially the Japanese.

7. In 1924, the disease was more prevalent during the hot season of the year.

8. The incidence rate among those using city water for drinking was 226.73 per 100,000 population, while the rate among

those using water from other sources was 253.24. Moreover, there is no direct chronological relation between the monthly incidence of typhoid (by dates of onset) and the results of the bacteriological examination of the city water taken at different points. Neither could it be shown that the artesian well water had any direct relationship to the occurrence of the disease. However, it has been found that the water became contaminated with *B. coli* thru careless handling on the part of the water carriers or of members of the household. It is probable that thru this means, the disease became disseminated.

9. Relatively high incidence rates were observed among those using public midden shed and flush closets, they being 322.98 and 272.56 per 100,000 respectively. This was probably due to the fact that in these districts in which the public midden shed was used, the flies were prevalent and those might have been the chief transmitters therein, while in other districts provided with sanitary sewage disposal, overcrowding and consequently contact infection might have been the principal factor.

10. Milk as a source of infection has been ruled out. However, a large proportion of the cases gave a history of having taken ice cream sold by street peddlers and at public places. The eating at public restaurants, the consumption of oysters and raw vegetables apparently have not been of epidemiological importance.

11. Flies probably played a significant rôle in the dissemination of the infection. The disease was found prevalent in houses where the sanitary conditions were poor. In sparsely populated districts where the environment was poor and the habit of the people unsanitary, flies have been prevalent and the typhoid incidence was relatively high.

12. It has been shown that contact infection played a great part in the propagation of the disease. There were found 188 foci during 1924, around which an aggregate of 399 or 53.29 per cent of the cases developed. Similar phenomena were observed among the cases that occurred in 1922 and 1923. The infection was most likely transmitted thru contact, either directly or otherwise. In each of 226 houses there occurred 2 or more cases.

13. Typhoid carriers were found among contacts, convalescents, food handlers, water carriers, and cases who died of miscellaneous diseases. In their stools, the organism was recovered. The positive carrier rate was found to be 5.77 per

1,000 for the last 3 years. Carriers doubtless have been responsible for a great majority of the cases that developed.

14. In view of the above findings, we believe that the typhoid situation in the city, altho it may be considered normal under the present circumstances, remains nevertheless a complex problem. The sources and avenues of infection are numerous. The insanitary handling of the water, the defective sewage disposal in many sections, the prevalence of flies, the insanitary environment and living conditions of the people, the overcrowding in tenement houses and elsewhere, and the presence of typhoid carriers engaged in food handling and various other occupations in the city all conjointly contribute to make up the so-called epidemiological typhoid-complex and explain the prevalence of the disease in the city.

#### RECOMMENDATIONS

We, therefore, recommend the following general measures, based upon the foregoing studies:

1. That efforts be made to further emphasize the importance and necessity for the prompt diagnosis and notification of cases to the Health Service.

2. That all conformed cases be hospitalized or strictly isolated under the guarantee of a competent physician. In either case, the house where the disease developed should be thoroughly disinfected and the household advised to use disinfectants for their hands, the patient's discharges, soiled clothings and beddings, or anything that comes in contact with the patient.

3. That individuals who have had typhoid be closely observed and be considered as potential carriers for a period of three months after recovery. That, three months after recovery so far as is practicable, three consecutive bacteriological examinations be made of the stools and urine to determine whether typhoid or paratyphoid bacilli still are being excreted (chronic carrier state). The three stool specimens should be collected after the administration of saline purgative at intervals of not less than two nor more than six days.

4. That the search for and detection of carriers of the infective agent among convalescents, food handlers, water carriers,



contacts, or what not, be pushed vigorously. Those found to be positive should be hospitalized and treated, and should held under observation until they are no longer a menace to public health. The regulations governing carriers and those who have had typhoid should be strictly enforced by the health stations.

5. That due to insufficient supply of drinking water which does not even extend actually to all parts of the city and in order to diminish the incidence of not only typhoid but also other intestinal diseases, the Angat project for furnishing a potable water supply for the city be developed as rapidly as possible. Meanwhile, strict supervision should be exercised over those engaged in collecting and delivering water for public consumption.

6. That the sanitary control and supervision over hotels, restaurants, markets, tiendas, and other places where food or food-stuffs are made, manufactured, sold, or offered for sale including milk and its by-products, be vigorously maintained. No food handler should be allowed to engage in that occupation unless he can present satisfactory evidences from a reputable physician that he is free from any communicable diseases.

7. That general sanitation with respect to cleanliness, sewage and refuse disposal, the proper disposition of garbage and manures, the measures for the prevention of the spread of flies and other insects, the filling up of low lands and drainage of stagnant waters, and the removal of nuisances in general, be given more active attention.

8. That systematic antityphoid inoculations of the public as well as contacts, as heretofore done, be continued. Attempts should be made to give 3 injections in order to insure maximum immunity to last at least 3 years. Special attention should be given to the immunization of prophylactic vaccination of food handlers and those who handle water for public use.

9. That public-health education of the masses as regards the possible means and measures they should adopt in order to protect themselves from the infection, be persistently carried out, and that more vigorous efforts be made to teach the convalescent typhoid patients, that through careless habits they are actually potential sources of danger to their friends and

their families, and thus attempt to gain their coöperation in preventing the spread of typhoid fever.

The Committee:

LEONCIO LOPEZ-RIZAL  
*Chairman*  
FAUSTINO ESTELLA  
*Member*  
FRANCISCO GOMEZ  
*Member*  
MANUEL V. ARGUELLES  
*Member*  
REGINO G. PADUA  
*Member*

Consultants and advisers:

C. R. LACY, M.D.  
*Special Member, International Health Board,  
Bureau of Science*  
J. F. SILER  
*Lieutenant-Colonel, M. C., U. S. A.  
Chairman, Army Medical Research Board*

## THE COMMON SKIN DISEASES AMONG FILIPINOS<sup>1</sup>

By Dr. PERPETUO GUTIERREZ

*Assistant Surgeon, Philippine Health Service*

Ringworm (*Herpes, buni*, Tagalo, Pampango, Visayan; *curad*, Ilocano; *culad*, Pangasinan).

Ringworm is a very common disease all over the Islands. There are several forms of this disease, but only two forms interest us; one is the common ringworm which the people call *buni*; the other is found on the hands and feet and is called *alipunnga* in Tagalo and pampango; *curad* in Ilocano; and *culad* in Pangasinan.

This disease is due to a small fungus or mould such as grows on your shoes during rainy season.

*Buni* may be transmitted in various ways. It may be transmitted by wearing somebody else's clothes. You may laugh at this, but it is a common practice among the poor people to borrow a neck-kerchief for a trip or during a fiesta. Now, many is the history that we get from people so infected, and who date their infection from the time of wearing such a piece of cloth. Such is also the case of *tapis*.

Another common way of transmitting the disease is by the use of a smooth round stone in taking a bath. It is a common custom among the people to rub themselves with such a piece of stone in taking a bath. This has probably been used by other people and some of them undoubtedly had *buni*, so common is the disease in the Philippines.

A third way of transmitting the disease is by the laundryman. In the Malay States, India, and Ceylon this is a common method of infection. In these countries this disease is called "Dhobie's itch," or laundryman's itch because of the belief that the laundryman transmits the disease. If you have ever watched your laundryman washing your clothes you can readily understand how this belief took roots in the minds of the people.

*Alipunnga*. The common methods of transmission of this form of the disease is through walking barefooted on the floors of bath rooms and wearing slippers of others. It is our custom

---

<sup>1</sup> Read in the Joint Conference of health officers and teachers, Baguio, May 5, 1926.

to offer slippers to visitors in our houses and some of these are surely infected with some forms of ringworm.

The lesson to be gained is never borrow or lend your clothes.

\* \* \*

*Scabies*; the itch; *sarna*; *galis*, tagalo; *galis aso*, catol, Leyte Visaya; *nuca*, Cebu, is a communicable disease due to small animal parasite and is characterized by intense itching, specially at night.

The disease is said to be a disease of the poor in other countries, but in the Philippines both the rich and the poor are oftentimes equally affected. In here the disease starts in the children of the family and later these transmit it to their parents. The usual route of transmission is from child to child or from servant to child. In children the general route of the infection is from schoolmates who are in intimate contact; sitting in the same desk or in their games. A more or less intimate contact is necessary to get the disease, such as different members of the family from the father to the smallest baby. A momentary contact on the other hand such as shaking hands, is not sufficiently long to transmit the disease.

#### THE ETIOLOGY

The disease is caused by a small animal parasite just visible to the naked eye and of a grayish white in color. It has eight legs, four in front and four behind. The front legs are provided with suckers and the hind legs with bristles. The female parasite is larger than the male. After impregnation it burrows itself into the skin just above the living layer, and in the tunnel thus made it lay its eggs, two a day during its life of one month. In about one week's time the eggs hatch and get up on the surface of the skin and mature in ten to fifteen days. These are impregnated and again burrow into the skin.

The symptoms may be divided into those that we see and those that the patient feels. We shall first describe those that the patient feels. These are manifested in an intolerable itching. This itching is much more marked at night when the patient goes to bed or during the heat of the day. The bed clothes are said to stimulate the parasites into activity producing the marked itching. Occasionally there is pain in those lesions secondarily infected with pyogenic organism producing pus.

The symptoms which we perceive are small vesicles or blisters or small papules at the point of entrance of the parasite into the skin. These are most common on the inner side of the

thighs, buttocks, webs of the fingers, wrists, and axilla. The disease then is most common on these regions of the body, the inner side of the thigh buttocks, webs of fingers, toes, wrist and axilla. With the Filipinos, specially in the poorer class, the lesions produced by the disease are very liable to infection. Instead of the small vesicles or papules, we see in Filipinos pustules in the places where the lesions are encountered. Because of the itching of the various pus infections.

When the infection is heavy the eruptions may be numerous covering nearly the whole body; this is called "dog scabies" by the laity.

#### PREVENTION

The disease spreads rapidly when people come in intimate contact. This contact is found in school children sitting in the same benches or when playing together. To prevent the infection from spreading it is necessary to keep the child out of school or if this can not be done the child should be kept away from the other children till his disease is cured.

\* \* \*

Yaws (*Frambesia*) *bubas*, *galis pateros*, *kati*, Tagalo.

Yaws is a communicable specific tropical disease caused by a minute spiral-shaped organism called *triponema pertenue*. It is characterized by the chronicity of its course and by the multiplicity of its eruptions.

This disease is called *bubas*, sometimes *galis pateros*, by other Tagalo provinces, *kati*; *bubas* in Ilocano; it is *gubas* or *gutling maragol* in Pampango; *buti* in Bicol and neighboring provinces (Samar, Marinduque, part of Tayabas); *tabucaao* in Cebu; *puco*, Bohol; *guiri sangcaili*, Pangasinan.

The disease is common all over the Islands, but it is most common in the Batanes group, the Ilocos provinces, Pangasinan, Zambales, Rizal, Bicol provinces, Cotabato, Sulu, and Davao. It is a most dreadful and repulsive disease. It attacks mostly children, specially those between 6 to 10 years; therefore during school age.

Age	Number	Per cent
1 to 12 years .....	9	3.89
13 to 15 years .....	78	30.34
6 to 10 years .....	84	48.4
11 to 15 years .....	48	18.67
16 to 20 years .....	7	2.72
21 to 25 years .....	31	12.06

The disease is not highly communicable. It requires a wound for the virus to enter the body and cause the disease.

This wound may be a large one. On the other hand it may be so minute as to escape notice. The exact method of transference of the virus from one individual to another is not exactly known, but there are experiments which seem to show that the disease may be transmitted by flies. Wounds and abrasions are common in the Islands and specially scabies is almost a universal disease. These are more often neglected than not, kept exposed to dirt and infection and specially as feeding grounds of flies. How many of you have watched flies swarm on this wound and if you had seen this fly sometime before, you may have seen it come from a yaws lesion, thus it may transmit the disease. Flies are abundant everywhere in the Philippines.

It is probably not necessary to describe the lesions of this disease as they are well known in regions where it exists. But for the benefit of those to whom I can not convey the nature of the disease by means of the local name, I shall attempt to describe it briefly. The disease starts with a primary lesion, called by the people the mother yaws, the leader, "ang inahin." This is usually in the lower extremity and appears as a wound about the size of a 50-cent piece whose surface is fungating and raised like a wart, although the center may be eroded. Later, that is, after about one month a general eruption appears; also of the same character, fungating, raised above the skin and covered by a crust the color of half ripe lemon. These appear all over the body from the crown of the head to the sole of the feet. Later still 1 to 5 years or 10 years various ulcerations appear to different parts of the body. Among the tickening of the palms and soles is the commonest. These lesions are called *tibac* in Tagalo; *mamaga* and *kubal*, Cebu; *pamujo*, Agusan.

#### PROPHYLAXIS

We have found that the disease can be easily cured by specific drugs, but to limit and eradicate the disease is not as easily done as we once thought. The treatment of these cases must be continued for years if complete eradication of the disease is to be the end.

For your purpose it is necessary that all wounds shall be properly covered and treated, not only to prevent infection but to prevent it from the superimposition yaws infections. Yaws cases are better kept out of schools till treated and cured.

## LECTURE II: MEDICAL INSPECTION

By MIRIAM E. GRIFFIN

*Philippine Health Service*

The keeping of records in medical inspection of schools is quite important. Each pupil must have a physical record covering, if possible, his entire school course.

In order to make the work of medical inspection of schools uniform in the Philippine Islands a committee composed of members from the American Red Cross, the Bureau of Education, and the Philippine Health Service have adopted a physical record card to be used in all school work. A complete and carefully prepared explanatory key enables all workers to use the same methods in recording the results of their work. The face of the card, to be filled in by doctor or nurse according as an examination or an inspection is made, calls for the name, sex, and home address of student, history of previous attacks of measles, whooping coughs pneumonia, diphtheria, mumps, tuberculosis, hookworm, malaria, chickenpox, typhoid, cholera, vaccinations. In most cases it takes considerable patience and ingenuity to secure this history.

Next comes the date of examination or inspection, name of school, grade, and age of pupil.

Next the height is recorded, and the weight, actual and normal (as determined by the weight, height, age chart prepared by the Public Welfare Commission.

Then the vision, right and left, and hearing, right and left, are recorded.

Defects noted are checked under the following headings: defective speech, defective nasal breathing, defective teeth, eye, ear, nose, adenoids, throat, tonsils, skin, lungs, heart, glands, nutrition, posture, orthopedic, malaria, intestinal parasites, and pediculosis.

On the reverse side of the card the School Record is filled in by the teacher at the end of the year. Attendance, scholarship, conduct, mentality, physical symptoms noted, as in ability to see the blackboard, scowling or wrinkling of forehead when reading or inability to hear ordinary tones of voice, inability

to breath with mouth closed, frequent headaches, toothaches, frequent request to go out. Uncleanliness, inactivity, lassitude, erratic eating habits.

There are further spaces for the family history and then a record of reference and treatment, diagnosis, to whom referred, treated, or not, number of treatments, results.

When a child is found defective, a notice is send to the parents, stating the nature of the defect. If the child is to be excluded, this fact is stated, if not, the child is referred for treatment to the family physician or school or other clinics. Very few of the students have private physicians and are glad to report to the school clinic. Sometimes the mothers bring several other children for treatment, having made a diagnosis of "el mismo."

Upon the completion of the examination of each school a report of the number of children examined, those having defects, and free from defects, and the nature and number of defects found, with other information is made on Form No. 14 for the information of Health and Education officials. One of the important duties of school physicians and nurses is the handling or prevention of epidemics. The school nurses and the physician have performed many vaccinations against smallpox and given many anticholera and typhoid injections.

Fortunately many of the diseases which ravage colder countries have been absent from the Philippine Islands; but in Manila, at least, some of these are appearing. I was greatly surprised near the close of the present school year to find a considerable number of cases of measles and a few of mumps and chickenpox appearing in the Central School. For some time I made daily visits to the school inspecting the classes for indications of fever, coryza, koplik's spots, and coughs.

In several cases children having these symptoms were requested to stay at home and few days after reports came in that they had developed the disease, but only a few of these cases developed.

I had observed that most of the cases were confined to the first grade and that the children of this grade had their recess at a different time from the children in the other grades. In modern procedure closing of schools is not recommended in time of epidemics.

In dealing with trachoma and contagious skin diseases it is necessary to exclude the children from school. The eyes are not benefited by use in school and there is a greater incentive to report for treatment when excluded. All forms of treatment



for trachoma are painful and there is a tendency to escape it if possible. One reason for demanding a medical certificate of the pupil entering the school for the first time is the fact that pupils excluded from one school for trachoma often seek to enter another school.

The school clinics are among the most valuable aids to school health work. Many families are too poor to feed and clothe their families properly, and consequently cannot afford to pay for medical treatment. To discover the existence of defects is of little value unless those defects can be remedied. Having become acquainted with the school physician and nurses in the schoolroom, parents and children are usually quite willing to report to the school clinic when asked to do so and having come once are quite apt to report of their own accord when ill.

More than one case of leprosy, smallpox, and other serious conditions have come into my care because the patient himself or some friend had once been a patient in my clinic. Little patients are now being brought to my clinic by parents who had been followed up by school nurses and brought into the school clinics a few years ago.

The clinic does not furnish treatment for all cases but frequently gives advice or refers to other doctors or clinics. An endeavor is now being made to develop a cardiac clinic and when the number of children suffering from malnutrition and under weight has been determined an effort will be made to start a nutrition class or clinic. These classes are held once a week and are frequently attended by the mothers. By means of talks on foods and other matters pertaining to nutrition an effort is made to rouse the interest of mothers and children in the subject and to keep them determine what is wrong in each individual case and to encourage them to overcome the difficulties.

With one exception the school clinics are held at the different health stations. For several years I have held a clinic at the Trade School. A well equipped office was furnished for the school physician. Minor injuries, infections of eye, throat, and skin are treated here and prescriptions are given. As these students work all day in shop and classroom and frequently have minor accidents, it is a saving of much time to have a physician in the school even for half an hour a day. The dental clinics instituted by the Junior Red Cross are very satisfactory, but unfortunately there are not enough dentists. In Manila the schedule is so arranged that the dentists spend a week in

each school once or twice a year. The equipment of the clinic is moved to the selected school and placed in a separate room if possible, usually in a corner of the principal's office. Here extractions, simple fillings, and cleaning are performed. Usually about twenty children can be cared for in a day. No work is done without express permission from the parents.

The school nurses play a very important part in the work of school inspection.

There is their work in the classroom, carrying on inspections alone or assisting the physician. Their work in the clinic is very important, but they are especially valuable in the follow-up work in the homes.

Unfortunately the school inspection personnel is so inadequate in the Philippine Islands that very little of this work can be done, but during the school vacations some of this work is done with very satisfactory results. Children suffering from disease are brought into the clinics and the parents receive advice and instruction. The work of health education as carried on by school authorities, health authorities, and the Red Cross takes many unique and interesting forms.

One way is by means of literature. An astonishing number of interesting and instructive books have been printed in simple and entertaining language for children, explaining and emphasizing all the various health rules. The question of foods, what to eat, when to eat, and how to eat. The question of exercise of regular habits, what to do in case of accidents, the care of the hair, teeth, nails, etc., in fact, everything which pertains to health is put in story-book form. At the present time the Bureau of Education is printing in the *School News Review* a series of health articles on twenty-five selected subjects. These articles were especially prepared for the occasion by the school physicians of Manila. Another means of health education is the use of health posters. In most of the schools in Manila are posters of this nature prepared by the Red Cross. In a drawing class at the Philippine Normal School I saw a very interesting collection of health posters being prepared by the students. It is a graphic and pleasing way of presenting health instruction and an aid to the classroom instruction in hygiene and sanitation. The health exhibits shown at the Carnival and on Garden Days are other means of health education.

One important duty of the school physician is to determine whether pupils are able to take physical education. As a part

of health education every school has some form of physical culture. Simple exercises for the younger children, dances and games as part of the playground work. For the older students military drill, running, and basket ball are provided. The work in the school gardens also provides exercise.

Sometimes those exercises bring to eight latent weaknesses, while at other times the students simply wish to avoid them. As the teachers cannot decide the matter a medical certificate was required as those were unduly easy to obtain, it was later decided that the medical certificate must come from a school physician.

I always give a careful physical examination and unless I find some serious defect, usually cardiac, I refuse to issue a certificate. Occasionally I suggest a few days of exemption during treatment. In this warm climate there is too great a temptation to shirk exercise.

In some cities special health pamphlets have been prepared by the health authorities instructing parents as to the methods and aims of medical inspection, the importance of conditions found, and steps necessary to remedy them.

Medical inspection of schools is a work that is full of satisfaction. The majority of school children do not come under the observation of a physician until a school doctor appears.

Children have no means of knowing that it is possible to see better than they do if they have defective vision, or to hear better if their hearing is defective.

Children are a curious combination of timidity and pluck and they struggle as best they may with their handicaps, and let themselves be set down as stupid rather than say that they cannot see or hear.

Even well-informed parents do not notice physical defects. I once examined a little American boy and found him to be suffering from tubercular lymph nodes. I sent a note to the parents explaining that he should receive treatment for cervical adenitis. The mother told me that she was obliged to consult a dictionary in order to find out what was wrong, but the child was placed under treatment and duly recovered.

In closing I wish to give one more quotation.

"Medical inspection is essential in country districts as well as in large cities, and rich communities as well as in poor ones. The locality has yet to be discovered in which medical inspection of school children is unnecessary or undesirable."

## GOVERNMENT HOSPITAL PRINCIPLES OF ETHICS

---

1. Let the stay of each patient in the hospital end in friendship whether the case recovered, improved, unimproved, or died.

2. Treat and deal with patients not as cases but as human beings.

3. Never argue with patients; persuasion is better than argument.

4. Everyone—doctor, nurse, admitting clerk, attendant—while on duty in the hospital, occupies the position of a host. The patients are the guests and must be treated with courtesy and kindness, even as hotel guests are treated.

5. No other single factor makes so many friends for a hospital as courtesy and considerateness; and conversely, so many enemies at the lack thereof.

6. Although business methods are needed in hospitals, rigidity in insisting on certain rules cannot be regarded as really businesslike, for it hurts the hospital more than it earns for it in the way of income and prestige.

7. It must not be lost sight of that the hospital is and always will be a home of refuge for the ailing, primarily and essentially, and every other consideration is secondary and incidental.

8. Patients often are peevish, cross, rude and disobedient—think of their ignorance and suffering and the miserable conditions in which they may have lived.

9. Obedience to rules and observance of good conduct should spring from a true spirit of loyalty and the sense of righteousness and not from mere desire of escaping penalties.

10. The management of some patients is difficult in the extreme or disagreeable, but sympathy, devotion to duty, love of work are sure marks of success.

11. Many things harmless in themselves such as loud laughing, boisterous conduct, rough jokes, whistling, are extremely annoying and out of place in a hospital.

12. Patients' records should be regarded as private property and their perusal may be allowed only to competent men.

13. Nurses, doctors and other personnel should abstain from discussing cases to patients or within their hearing. Gossip in a hospital is abominable.

14. The hospital should have abundant heart if less brain, and which should be manifest throughout the institution, in the admitting clerk as in the chief, in the dispensary, in the kitchen, everywhere.

15. Create the atmosphere that a hospital is not an ordinary business enterprise of the Government, but a holy place of charity where our Heavenly Father rules supreme through the human heart.

16. Rules and regulations are indispensable for the government of the hospital and are intended for the good of the patients themselves, who should observe them if they wish to enjoy the service.

17. Some rules may appear captious and unfair, but think of the tremendous odds the hospital management has to contend with and overcome in dealing with abnormal people such as the sick are.

18. The public should be cognizant of the fact that in spite of undreamed of progress and marvelous achievements so far attained, medical art and science is still in its infancy and the result of treatment for many diseases unsatisfactory.

19. Authority is delegated and responsibility shifted for the same reason that work is divided among the different units. The head can no more supervise all details than can he do all the work by himself.

20. Bear in mind that provincial hospitals are maintained chiefly with Government funds, and Government employees, rightly or wrongly, feel entitled to more than ordinary attention on the part of hospital officials.

21. Every applicant, whether for admission, consultation, treatment, or mere examination, irrespective of social status should at least receive a cursory examination, prescription, or advice, as the case may be.

22. With respect to private practitioners of medicine, our conduct should be ruled by the golden injunction, "Do unto others as you would like them do unto you" and also by the Oath of Hippocrates.

23. Technical efficiency is not all there is to a truly successful hospital management—the personnel, like the crew of a happy ship, must be contented and the least member must feel he is doing as useful work as anybody else.

24. Place before the public's eye the hospital motto that reads: "To relieve suffering, to promote health and to be of genuine service to humanity."

Called from various sources and otherwise added to by

G. SANTOS CUYUGAN

*Chief, Tayabas Provincial Hospital*

*Lecturer-Delegate to the Baguio*

*Health Assembly, May, 1926*

## MISCELLANEOUS

---

### AGUSAN

The municipal nurses and the chief sanitary inspector were given practical training at the Butuan Public Hospital regarding the treatment of trachoma. Physical examination of school children was also performed and 9 cases of trachoma found and treated.

### ALBAY

Two hundred and twenty-seven neosalvarsan injections were given to yaws cases in Catanduanes, 101 in Virac, and 126 in Baras.

One hundred and seventy-three Antipolo closets were constructed during the month.

### BATANGAS

Two thousand one hundred and eighty-two persons were given pure cholera vaccination, 882 with pure typhoid and 57 with mixed vaccinations. Twenty seven schools and 2,362 school children were physically examined and inspected, respectively; 91 Antipolo closets were constructed.

### BOHOL

Physical examination of school children in the elementary school of Candijay was made and among 150 children two were found suffering from trachoma, 3 policular conjunctivities, and 3 cases of chronic conjunctivities. These cases were brought to the public dispensary for treatment.

### CAGAYAN

The month has been devoted to the inspection of premises, stores where foodstuffs are being sold.

An intensive campaign was launched against measles in almost all the municipalities of the province.

Due to the recent fire that razed the municipal building to the ground, the office of the president, Fourth Sanitary Division, is temporarily quartered in one of the rooms of the Mabini Lodge. The Philippine Health Service is greatly indebted to the officers of the lodge who have offered its occupancy free of charge. This office wishes to express its appreciation and gratitude for the civic spirit shown by the officers of the Mabini Lodge. Medicines and equipments stored in the office except the wardrobe and wooden table were all saved.





## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of September, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1927<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,184
Filipinos.....	294,187
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>320,394</b>

#### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,538</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,238
5. Quiapo.....	15,862
6. San Miguel.....	4,484
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,282</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,816
9. Intramuros.....	14,625
10. Ermita.....	16,139
11. Malate.....	16,471
12. Paco.....	16,037
13. Pandacan.....	5,861
14. Santa Ana.....	6,675
<b>Total.....</b>	<b>80,624</b>
<b>Grand total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, SEPTEMBER, 1927**

Date	Pressure mean <sup>1</sup>	Temperature					
		In shade <sup>2</sup>					Underground
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.
							8 a. m. mean      2 p. m. mean
	<i>mm.</i>	<i>°C.</i>	<i>°C.</i>		<i>°C.</i>		<i>°C.</i>
1-10.....	758.60	27.7	32.2	3-8	22.9	1	30.2
11-20.....	57.93	26.7	33.2	12	22.4	11	30.0
21-30.....	59.23	27.2	33.2	30	28.0	21	29.9

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	<i>Per cent</i>	<i>Per cent</i>		<i>Per cent</i>	
1-10.....	79.5	82.9	9	75.3	5
11-20.....	84.7	91.8	18	80.9	11
21-30.....	83.9	87.5	24	81.3	30

Date	Prevailing direction	Wind			Atm. idometer <sup>2</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		<i>Kms.</i>	<i>Kms.</i>		<i>mm.</i>	<i>mm.</i>	
1-10.....	SW	2,225.6	351.5	6	40.5	5.6	4
11-20.....	E quad	1,518.0	352.0	17	20.6	3.6	11
21-30.....	E quad	956.0	113.5	29	26.5	3.8	26

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	<i>h. m.</i>	<i>h. m.</i>		<i>mm.</i>	
1-10.....	89 50	10 25	5	13.0	4
11-20.....	31 20	8 05	11	97.4	7
21-30.....	57 10	8 45	26	26.4	5

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

# NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	6	11	17	66.04
Filipinos.....	656	625	1,281	53.02
Spaniards.....	2	4	6	37.86
Other Europeans.....	3	2	5	54.06
Chinese.....	32	27	59	40.23
All Others.....	5	6	11	61.26
Total and average.....	704	675	1,379	52.40

# NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I, MEISIC:							
1. Tondo.....	177	193	370	7	11	18	388
2. San Nicolas.....	29	37	66	2	1	3	69
3. Binondo.....	25	17	42	1	1	2	44
Total.....	231	247	478	10	13	23	501
No. II, SAMPALOC:							
4. Santa Cruz.....	81	82	163	6	8	14	177
5. Quiapo.....	27	23	50	1	1	2	52
6. San Miguel.....	9	10	19				19
7. Sampaloc.....	119	107	226	9	8	17	243
Total.....	236	222	458	16	17	33	491
No. III, PACO:							
8. Port Area.....		1	1				1
9. Intramuros.....	38	23	61	4		4	65
10. Ermita.....	46	46	92	2	2	4	96
11. Malate.....	53	45	98	7	3	10	108
12. Paco.....	28	32	60	3	1	4	64
13. Pandacan.....	9	7	16	1		1	17
14. Santa Ana.....	19	16	35	1		1	36
Total.....	193	170	362	18	6	24	387
Grand total.....	660	639	1,299	44	36	80	1,379

Attended by physicians, living, 472; stillbirths, 32.

Attended by midwives, living, 90; stillbirths, 0.

Attended by families, living, 817; stillbirths, 12.

# NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	3		3	11.65
Filipinos.....	317	254	571	23.63
Spaniards.....	2		2	12.45
Other Europeans.....	1		1	10.81
Chinese.....	22	4	26	17.73
All Others.....	2		2	11.14
Total and average.....	347	258	605	22.99

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS**  
**[Stillbirths not included]**

Districts	Male	Female	Total
<b>No. I, MEXIC:</b>			
1. Tondo.....	105	84	189
2. San Nicolas.....	17	16	33
3. Binondo.....	9	5	14
Total.....	131	105	236
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	59	44	103
5. Quiapo.....	13	6	19
6. San Miguel.....	7	8	15
7. Sampaloc.....	49	43	92
Total.....	128	101	229
<b>No. III, PACO:</b>			
8. Port Area.....	1		1
9. Intramuros.....	11	8	19
10. Ermita.....	11	5	16
11. Malate.....	36	16	52
12. Paco.....	16	6	22
13. Pandacan.....	6	10	16
14. Santa Ana.....	7	7	14
Total.....	88	52	140
Grand total.....	347	258	605

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,**  
**TRANSIENTS INCLUDED**  
**[Stillbirths not included]**

Social condition	Male	Female
Married.....	124	73
Divorced.....		
Widowed.....	30	60
Single.....	271	154
Conditions not stated.....	5	2
Total.....	430	289
Grand total.....	719	

Stillbirths .....	44
Number of deaths with medical attendance.....	501
Number of deaths without medical attendance.....	218

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year .....	99	70	12	1	182
1 year plus .....	40	15	4	2	61
2 years plus .....	16	14	3	2	35
3 years plus .....	12	5	.....	.....	17
4 years plus .....	5	8	.....	.....	13
5 to 9 years .....	10	9	2	2	23
10 to 14 years .....	6	3	2	.....	11
15 to 19 years .....	12	9	7	8	31
20 to 24 years .....	21	12	4	5	42
25 to 29 years .....	13	15	7	5	40
30 to 34 years .....	11	10	7	.....	28
35 to 39 years .....	16	8	5	1	30
40 to 44 years .....	5	5	2	2	14
45 to 49 years .....	15	12	6	1	34
50 to 54 years .....	10	5	7	1	23
55 to 59 years .....	14	12	4	1	31
60 to 64 years .....	10	7	2	.....	19
65 to 69 years .....	6	8	7	1	22
70 to 74 years .....	7	8	.....	1	16
75 to 79 years .....	6	7	.....	.....	13
80 to 84 years .....	7	8	.....	1	16
85 to 89 years .....	2	7	.....	.....	9
90 to 94 years .....	3	.....	1	.....	4
95 to 99 years .....	1	.....	.....	.....	1
100 years and over .....	.....	1	.....	1	2
Age not stated .....	.....	.....	.....	.....	.....
<b>Total .....</b>	<b>347</b>	<b>258</b>	<b>82</b>	<b>30</b>	<b>717</b>

NOTE.—One male Filipino age unknown and one female Filipina, 70 years of age, permanent residences unknown are not included in the above tables.









XII. Early infancy									
160-163									
160	Congenital debility, icterus, and sclerema								31
161	Premature birth: Injury at birth:								10
	a. Premature birth (not stillborn)								3
162	b. Injury at birth (not stillborn)								11
	Other diseases peculiar to early infancy								1
164	XIII. Old age								
164	Senility								22
165-203	XIV. External causes								
165	Suicide by solid or liquid poisons (corrosive substances excepted)								1
177	Other acute accidental poisonings (gas excepted)								1
179	Accidental burns (conflagration excepted)								2
182	Accidental drowning								2
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):								
	c. Automobile accidents								1
204-205	XV. Ill-defined diseases								
205	Cause of death not specified or ill defined:								2
	a. Ill defined								
	Total	3	317	254	2	1	22	4	2
	Grand total	3	571	2	1	26	2		605





**NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA—Continued**

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>													
154	Other diseases of the skin and annexe.....			1										1
160-163	<i>XII. Early infancy</i>													
162	Other diseases peculiar to early infancy.....			1										1
164-	<i>XIII. Old age</i>													
164	Senility.....			1	2									3
165-203	<i>XIV. External causes</i>													
179	Accidental burns (conflagration excepted).....			1	1									2
187	Accidental traumatism by machines.....			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landlides, etc.):													
	b. Street-car accidents.....			1										1
	c. Automobile accidents.....			2										2
	f. Injuries by other vehicles.....			1										1
197	Homicide by firearms.....			1										1
198	Homicide by cutting or piercing instruments.....				1									1
	Total.....		1	78	29	1	1			3				112
	Grand total.....	1		107		1				3				112



INFANT MORTALITY : DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA. DURING THE MONTH OF SEPTEMBER, 1927 (INCLUDING TRANSIENTS)

**[Stillbirths not included]**

Causes of death	Age at death under 1 year																								
	1 month + months + years		2 months + months + years		3 months + months + years		4 months + months + years		5 months + months + years		6 months + months + years		7 months + months + years		8 months + months + years		9 months + months + years		10 months + months + years		11 months + months + years		Total under 1 year		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All Causes.....	12	6	10	1	9	5	7	6	6	5	2	3	2	3	2	4	5	8	4	4	3	5	3	70	43
COMMUNICABLE DISEASES:																									
Typhoid and paratyphoid fever (1)																									
Smallpox (6)																									
Measles (7)																									
Whooping-cough (9)																									
Diphtheria (11)																									
Influenza (11)																									
Asiatic cholera (14)																									
Dysentery (16)		1																						1	1
Meningococcus meningitis (24)																									
Other epidemic and endemic diseases (25)																									
Tetanus (29)		1													1									1	1
Other infectious diseases (1-42)																								1	1
Beriberi (55)	3		1		1		1	1									1							2	3
Diseases of nervous system (70; 71; 80; 85)																								2	3
Respiratory diseases (99; 109; 101; 107)	7	1	3	1	7	3	4	4	3	5	1	1	1	2	2	3	4	5	3	3	4	3	4	41	30
Gastro intestinal diseases (108; 109; 113; 115; 116; 127)																									
Congenital malformations (159)		1	1								1												1	5	3
Early infancy (160; 161; 162; 163)	2	1	3		1	1																		6	2
All other causes (43-205) <sup>1</sup>		1	2		1	1	1	1	2							1		2		1				9	3

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	20,883
Number of rats caught by spring traps.....	2,855
Number of cage wire traps set.....	600
Number of rats caught by cage wire traps.....	1
Number and kind of baits (coconuts).....	22,080
Number of poison portions placed.....	19,629
Number of rats found poisoned.....	344
Number of rats killed by clubs and other weapons.....	1,094
Number of rats found dead from other causes.....	465
Total number of rats otherwise caught, found dead or killed.....	4,759
Total number of rats sent to the laboratory for examination.....	4,759
Total number of rats found positive plague.....	0

---

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF SEPTEMBER, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female			Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths			
I.....	No. 1.....	5		3						1			5			4			9	
	No. 2.....	1											1						1	
	No. 3.....	3		3									3			3			6	2
	No. 4.....	2		2									2			2			4	
II.....	No. 5.....	2											2							
	No. 6.....	1		1						1			1			2			3	1
	No. 7.....	1											1			1			2	1
	No. 8.....	2											2						2	1
III.....	No. 9.....			1												1			1	
	No. 10.....	3		1									3			1			4	
	No. 11.....			1												1			1	
	No. 12.....																		1	
	No. 13.....																		1	
	No. 14.....																			
Grand total	18	3		12	1					2			18	3		14	1		32	4

**REMARKS:**

Cases confirmed as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By blood reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among non resident persons not included in the table.....

Death reported among non resident persons not included in the table.....

Typhoid carrier—None.

31

1

0

1

5

0

0

26

13

3



CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.	No. 1.	1	1	1	3	3	1	1	3	3	2	2	3	3
	No. 2.	1	1	1	1	1	1	1	2	2	2	2	4	4
	No. 3.	1											1	1
	No. 4.								1	1			1	1
II.	No. 5.	1							1	1	1	1	2	1
	No. 6.	1	1	1	1	1	1	1	1	1	1	1	1	2
	No. 7.	1	1	1	1	1	1	1	1	1			1	1
	No. 8.	2	1	1	1	1	1	1	3	2	1	1	4	2
III.	No. 9.	1	1	1	2	1	1	1	3	2	2	1	5	2
	No. 10.	1	1	1	1	1	1	1	1	1	1	1	2	2
	No. 11.	1	1	1	1	1	1	1	1	1	1	1	2	2
	No. 12.	1	1	1	1	1	1	1	1	1	1	1	1	1
Grand total.	No. 13.	8	5	4	2	7	4	4	16	12	8	6	24	18
	No. 14.													

REMARKS:

Amoebic dysentery..... 4  
 Bacillary dysentery..... 13  
 Unspecified..... 7  
 Cases reported among nonresident persons not included in the table..... 3  
 Deaths reported among nonresident persons not included in the table..... 2

Dysentery carrier—2

**CHOLERA REPORTED DURING THE MONTH OF SEPTEMBER, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths
I... { No. 1..... No. 2..... No. 3.....	.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
II... { No. 4..... No. 5..... No. 6..... No. 7.....	.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
III... { No. 8..... No. 9..... No. 10..... No. 11..... No. 12..... No. 13..... No. 14.....	.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
Grand total.....	.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....

**REMARKS:**

No nonresident case was reported during the month.

Cholera carrier—29.

**ARKS:**  
Cases reported among nonresident persons not included in the table...  
Deaths reported among nonresident persons not included in the table...

REMARKS:

**Cases reported among nonresident persons not included in the table...**

Deaths reported among nonresident persons not included in the table...

**Diphtheria carrier—None.**

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF SEPTEMBER, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	6	5	1	
Varicella.....		1		
Varioloid.....				
Smallpox.....				
Measles.....	4	2	1	
Whooping cough.....				
Influenza.....	24	5	5	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....		1		1
Tuberculosis of the respiratory organs.....	173	117	77	56
Tuberculosis of the other organs.....	11	10	11	9
Beriberi, infantile.....	12	8	12	8
Beriberi, adult.....		2		2

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	34	5	3	
Varicella.....	1	1		
Varioloid.....				
Smallpox.....				
Measles.....		2		
Whooping cough.....				
Influenza.....	1			
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....	1			
Tuberculosis of the respiratory organs.....	35	14	15	7
Tuberculosis of the other organs.....	2	3	2	2
Beriberi, infantile.....	1		1	
Beriberi, adult.....		2		

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF SEPTEMBER, 1927**

Sera and vaccines	On hand January 1, 1927	Received during the month	Total to be accounted for	Distrib- uted during the month	Remaining at the end of the month
Anti-diphtheric serum (units).....	570,000	500,000	1,070,000	420,000	650,000
Anti-dysenteric serum (ampoules).....	169	200	369	327	42
Anti-tetanic serum (units).....	450,000	500,000	950,000	400,000	550,000
Cholera vaccine (c. c.).....	6,300	90,000	96,300	90,300	6,000
Dried vaccine virus (units).....	106,300	100,000	206,300	72,200	134,100
Dysenteric vaccine (c. c.).....	1,440	49,020	50,460	47,460	3,000
Fresh vaccine virus (units).....	270,600	100,000	370,600	158,900	211,700
Gonococcus vaccine (ampoules).....		224	224	224	
Mixed typhoid cholera vaccine (c. c.).....	44,180	120,000	164,180	126,080	38,100
Normal horse serum (ampoules).....		12	12	12	
Streptococcus vaccine (ampoules).....		10	10	10	
Typhoid vaccine (c. c.).....	15,720	29,100	44,820	24,300	20,520



**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF SEPTEMBER, 1927**

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.	Tondo.	15	3	13	.....	28	3
	San Nicolas.	10	15	3	6	13	21
	Binondo.	.....	.....	.....	.....	.....	.....
	Santa Cruz.	1,538	1,376	767	722	2,305	2,098
No. 2.	Quiapo.	2	1	.....	.....	2	1
	San Miguel.	.....	.....	.....	.....	.....	.....
	Sampaloc.	30	16	6	3	36	19
	Port Area.	.....	.....	.....	.....	.....	.....
No. 3.	Intramuros.	21	15	4	3	25	18
	Ermita.	.....	.....	.....	.....	.....	.....
	Malate.	12	8	8	1	20	9
	Paco.	12	.....	3	.....	15	.....
	Pandacan.	.....	.....	.....	.....	.....	.....
	Santa Ana.	.....	.....	.....	.....	.....	.....
Total.		1,640	1,434	804	735	2,444	2,169

Number of injections made in—

Health districts	Municipal districts	Adults						Children						Total number of injections					
		First injections		Second injections		Third injections		First injections		Second injections		Third injections		First		Second		Third	
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1.	Tondo	4,395	3,521			3,178	54	2,600	59	3,322	22	4,069	54	6,995	59	7,443	22	7,247	
	San Nicolas	533	573			521		158		148		117		691		721		638	
	Binondo	299	242			205		67		1		21		356		243		226	
	Sancta Cruz	1,223	2,670			2,428		404		536		464		1,677		3,206		2,892	
No. 2.	Quapo	6	1											6					
	San Miguel	3	3																
	Sampaloc	1,571	1,023			808	1	3,211		2,662		564	1	4,782		3,685		1,372	
	Port Area																		
No. 3.	Intramuros	559	320			200	11	156	8	106	5	88	11	715	8	426	5	288	
	Ermita	1,352	703			524	5	586	6	586	4	238	5	1,876	6	1,289	4	619	
	Malate	859	656			431	7	1,068	4	966	4	951	7	1,927	4	1,622	4	1,382	
	Paco	1,070	748			711		399		293		207		1,469		1,041		918	
	Pandacan																		
	Santa Ana	31	16			33		14		10		18		45		26		51	
Total		11,951	10,476			8,896	78	8,601	77	9,230	35	6,737	78	20,552	77	19,706	35	15,633	

**Mixed typhoid and cholera vaccine used for the first and second injections.**

**Pure typhoid vaccine used for the third injections.**

V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Vaccinations			
	Total vac- cinations	Previously vaccinated		
		Never	Success- fully	Unsuc- cessfully
Abra.....	11,165	2,196	3,236	5,733
Agusan.....	6,727	1,435	2,608	2,621
Albay.....	49,426	9,554	10,108	23,761
Antique.....	13,043	3,320	6,153	3,570
Bataan.....	10,861	3,969	3,472	3,420
Batanes.....	3,225	217	746	2,262
Batangas.....	44,164	12,936	9,711	21,517
Bohol.....	17,413	6,165	4,303	6,945
Bukidnon.....	5,362	1,657	1,467	2,238
Bulacan.....	18,931	6,643	6,125	6,163
Cagayan.....	57,029	10,630	35,785	10,614
Camarines Norte.....	13,400	2,636	5,915	4,849
Camarines Sur.....	23,728	5,819	7,642	10,267
Capiz.....	36,133	8,321	16,246	11,566
Catanduanes.....	15,507	3,356	2,533	9,618
Cavite.....	37,023	5,129	23,600	8,294
Cebu.....	79,894	27,655	11,499	40,740
Cotabato.....	22,883	6,436	7,391	9,062
Davao.....	32,069	14,614	9,459	7,996
Ilocos Norte.....	32,790	6,203	11,179	15,408
Ilocos Sur.....	22,767	5,984	2,781	14,002
Iloilo.....	109,388	27,219	65,226	16,943
Isabela.....	30,661	7,694	14,879	8,088
Laguna.....	74,592	10,797	51,695	12,100
Lanao.....	32,326	11,205	15,339	5,782
La Union.....	22,444	4,406	278	17,760
Leyte.....	108,583	30,419	41,699	36,565
Marinduque.....	60,860	4,799	41,581	14,480
Masbate.....	19,122	3,642	9,845	5,635
Mindoro.....	4,537	1,016	984	2,531
Misamis.....	20,110	6,742	2,059	11,309
Mountain Province.....	40,577	11,991	20,766	7,820
Nueva Ecija.....	23,366	9,751	4,503	9,112
Nueva Vizcaya.....	3,802	1,234	528	2,040
Occidental Negros.....	88,752	30,594	39,432	18,726
Oriental Negros.....	27,006	8,565	8,047	10,394
Palawan.....	1,207	253	612	342
Pampanga.....	31,729	8,763	10,701	12,265
Pangasinan.....	47,032	15,744	7,099	24,189
Rizal.....	76,712	13,429	59,460	3,823
Romblon.....	39,266	6,659	22,729	9,878
Samar.....	65,607	12,060	29,332	24,225
Sorsogon.....	22,745	10,133	308	12,304
Sulu.....	24,723	14,067	3,723	6,933
Surigao.....	6,062	2,792	659	2,611
Tarlac.....	21,986	4,660	12,960	4,366
Tayabas.....	31,454	12,718	6,571	12,165
Zambales.....	10,330	3,591	2,171	4,568
Zamboanga.....	9,067	2,627	1,376	5,064
Total.....	1,607,592	422,495	656,421	528,676

<sup>1</sup> Incomplete; reports from other provinces not yet received.

NOTE.—Vaccinations performed by vaccinating parties are included in the above table.



**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1927—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	850	462	1,827	1,468	1,945	3,334	4,622	5,264
Agusan.....	246	196	365	188	1,224	992	1,835	1,376
Albay.....	4,330	1,282	6,453	1,577	10,888	5,024	21,671	7,883
Antique.....	1,345	350	1,426	977	1,278	1,761	4,049	3,088
Bataan.....	2,105	441	2,767	1,108	2,381	947	7,253	2,496
Batanes.....	279	96	595	227	960	482	1,834	805
Batangas.....	6,309	1,668	9,069	3,637	9,259	7,519	24,637	12,824
Bohol.....	2,425	663	3,131	1,214	4,455	3,347	10,011	5,224
Bukidnon.....	113	120	366	470	1,190	2,145	1,669	2,735
Bulacan.....	5,550	1,015	3,988	1,656	3,806	2,334	13,344	5,005
Cagayan.....	3,797	698	6,410	1,454	13,606	13,643	23,813	15,795
Camarines Norte.....	1,535	306	2,329	535	4,104	1,794	7,968	2,635
Camarines Sur.....	3,620	1,190	3,572	1,233	7,557	3,940	14,649	6,363
Capiz.....	2,876	625	4,093	1,802	12,117	5,440	19,086	7,867
Catanduanes.....	1,144	677	1,285	780	1,835	1,232	4,264	2,689
Cavite.....	4,119	677	3,762	1,420	9,717	8,393	17,598	10,490
Cebu.....	4,119	2,579	9,508	3,209	8,981	8,398	26,713	14,186
Cotabato.....	593	465	1,555	1,553	5,089	4,769	7,237	6,787
Davao.....	959	335	2,713	1,053	12,446	5,382	16,118	6,770
Ilocos Norte.....	4,012	1,267	6,042	2,218	7,816	8,030	17,870	11,515
Ilocos Sur.....	2,820	917	4,089	1,671	4,039	4,045	10,948	6,633
Iloilo.....	6,153	962	13,203	3,804	31,436	26,938	50,792	31,704
Isabela.....	1,853	822	4,035	1,192	9,184	6,993	15,072	9,007
Laguna.....	3,953	872	6,125	2,689	17,545	18,211	27,623	21,772
Lanao.....	535	117	2,481	619	8,661	4,427	11,677	5,163
La Union.....	2,824	762	3,400	2,556	3,045	4,637	9,269	7,955
Leyte.....	4,476	1,285	14,541	3,760	34,153	13,992	53,170	19,087
Marinduque.....	1,248	365	3,883	1,261	22,014	10,297	27,145	11,923
Masbate.....	783	280	1,576	541	4,658	3,093	7,017	3,914
Mindoro.....	613	271	485	277	1,206	859	2,304	1,407
Misamis.....	1,193	488	1,890	978	3,265	2,093	6,348	3,559
Mountain Province.....	1,345	278	3,830	936	14,312	8,443	19,487	9,657
Nueva Ecija.....	3,988	1,350	5,663	2,272	3,547	3,301	13,198	6,923
Nueva Vizcaya.....	571	265	494	438	671	1,142	1,736	1,845
Occidental Negros.....	6,623	1,191	10,839	2,933	17,430	16,214	34,892	20,338
Oriental Negros.....	3,555	1,074	3,842	1,808	7,171	3,932	14,668	6,814
Palawan.....	38	15	117	92	288	307	443	414
Pampanga.....	2,916	786	2,181	840	4,208	4,221	9,300	5,847
Pangasinan.....	8,090	2,083	9,303	3,320	8,736	8,217	26,129	18,620
Rizal.....	4,647	1,343	6,241	2,670	15,839	23,684	26,727	27,697
Romblon.....	1,388	207	4,633	1,358	14,249	10,444	20,270	12,009
Samar.....	2,774	942	6,771	3,415	18,504	10,177	28,049	14,534
Sorsogon.....	2,007	831	4,316	2,007	5,975	3,278	12,298	6,116
Sulu.....	1,305	400	4,121	1,197	7,856	3,127	13,282	4,724
Surigao.....	751	274	1,075	399	1,475	721	3,301	1,394
Tarlac.....	2,052	814	3,109	1,748	4,086	6,855	9,247	9,417
Tayabas.....	4,547	808	6,353	1,408	10,970	5,465	21,870	7,681
Zambales.....	1,742	452	1,623	872	1,599	2,545	4,964	3,869
Zamboanga.....	484	586	881	1,237	1,195	2,119	2,560	3,942
Total.....	129,605	35,952	202,356	76,077	397,966	298,683	729,927	410,712

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	22,888	8,000	133	31,021
Antique.....	16,074	8,093		24,167
Bataan.....	1,948			1,948
Batangas.....	18,803	40		18,843
Bulacan.....	155,630	2,469		158,099
Camarines Norte.....	1,841	10		1,851
Camarines Sur.....	21,081	639		21,720
Capiz.....	13,516	5,873		19,389
Catanduanes.....	288			288
Cavite.....	386			386
Cebu.....	57			57
Ilocos Norte.....	14,644	6,717		21,361
Iloilo.....	20,970	4,388		25,358
Isabela.....	457	253		710
Laguna.....	4,619	643		5,262
Lanao.....	828	456		1,284
Leyte.....	39,067	8,204		47,271
Marinduque.....	502	280		782
Masbate.....	223	108		331
Mindoro.....	402			402
Nueva Ecija.....	148	57		205
Pampanga.....	48,346	6,183		54,529
Pangasinan.....	8,987	4,985		13,972
Rizal.....	51,515	11,205		62,720
Romblon.....	4,192	159		4,351
Samar.....	1,678	473		2,151
Sorsogon.....	6,247	908		7,155
Tarlac.....	6,105	978		7,083
<b>Total.....</b>	<b>461,392</b>	<b>71,121</b>	<b>133</b>	<b>532,646</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTIDISENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Antique.....	361	188		549
Bataan.....	558	486		1,044
Batangas.....	140	79		219
Bukidnon.....	89			89
Bulacan.....	634	272		906
Cagayan.....	31	21		52
Ilocos Sur.....	73	29		102
Laguna.....	2,127	1,110		3,237
La Union.....	625	307		932
Masbate.....	1,204	410		1,614
Pampanga.....	856	158		1,014
Rizal.....	1,186	661		1,847
Surigao.....	56	12		68
Tarlac.....	256	61		317
Tayabas.....	1,936	958		2,894
<b>Total.....</b>	<b>10,132</b>	<b>4,752</b>		<b>11,884</b>

<sup>1</sup> Antidysentery vaccinations practically started in the provinces in June, 1927.

Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injection	Third injection	Total
Albay.....	361	307	153	821
Batangas.....	4,038	2,471	188	6,697
Bulacan.....	2,577	1,727	1,342	5,646
Camarines Sur.....	97	19		116
Catanduanes.....	7	6		13
Iloilo.....	1,979	933	357	3,269
Laguna.....	5,633	3,618	1,436	10,687
La Union.....	267	242	244	753
Mountain Province.....	117	111	111	339
Nueva Ecija.....	741	523	287	1,551
Pampanga.....	2,710	1,739	834	5,283
Pangasinan.....	2,323	1,870	1,253	5,446
Rizal.....	1,787	672	92	2,551
Samar.....	522	23		545
Sorsogon.....	115			115
Tarlac.....	752	287	20	1,059
<b>Total.....</b>	<b>24,026</b>	<b>14,548</b>	<b>6,317</b>	<b>44,891</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH MIXED (TYPHOID AND  
CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	9,573	2,662		12,235
Bataan.....	2,029	1,178		3,207
Batanes.....	1,504	1,303	710	3,517
Batangas.....	3,820	2,332		6,152
Bohol.....	3,404	2,704		6,108
Bukidnon.....	62	54		116
Bulacan.....	1,329	600		1,929
Cagayan.....	6,819	3,109		9,928
Camarines Norte.....	2,880	980		3,860
Camarines Sur.....	3,463	1,506		4,969
Cavite.....	54,480	53,027		107,507
Cebu.....	14,701	3,346		18,047
Cotabato.....	829			829
Davao.....	4,039	2,391		6,430
Ilocos Norte.....	2,096	1,126		3,222
Ilocos Sur.....	3,361	2,923		6,284
Iloilo.....	11,724	6,055		17,779
Isabela.....	63	56		119
Laguna.....	84	79		163
Lanao.....	5,208	2,310		7,518
La Union.....	4,396	3,711		8,107
Leyte.....	15,133	3,966		19,099
Marinque.....	1,901	632		2,533
Masbate.....	1,694	745		2,439
Mindoro.....	819	22		841
Misamis.....	9,201	2,975		12,176
Mountain Province.....	356			356
Nueva Ecija.....	13,650	6,194		19,844
Nueva Vizcaya.....	4,468	3,765		8,233
Occidental Negros.....	66,089	35,433		101,522
Oriental Negros.....	4,256	2,891		7,147
Palawan.....	216	135		351
Pampanga.....	46,616	21,926		68,542
Pangasinan.....	3,980	2,732		6,712
Rizal.....	31,616	16,975		48,591
Romblon.....	96	17		113
Samar.....	5,491	2,749	173	8,413
Surigao.....	1,241	731		1,972
Tarlac.....	5,165	1,197		6,362
Tayabas.....	23,468	10,846		34,314
Zambales.....	6,766	6,180		12,946
Zamboanga.....	6,933	1,476		8,409
<b>Total.....</b>	<b>385,019</b>	<b>213,039</b>	<b>883</b>	<b>598,941</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF SEPTEMBER, 1927**

(No case and no death reported during the month)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE  
MONTH OF SEPTEMBER, 1927**

(No case and no death reported during the month)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF SEPTEMBER, 1927**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, September 1, 1927:</b>				
Minor.....	148	138	75	361
Sewer.....	26	51	1	78
Vacating.....	8	11		19
Filling.....	19	35	21	75
<b>Total.....</b>	<b>201</b>	<b>235</b>	<b>97</b>	<b>533</b>
<b>Orders issued during the month:</b>				
Minor.....	6	4	15	25
Sewer.....				
Vacating.....		1		1
Filling.....				
<b>Total.....</b>	<b>6</b>	<b>5</b>	<b>15</b>	<b>26</b>
<b>Orders completed during the month:</b>				
Minor.....	10	6	7	23
Sewer.....			1	1
Vacating.....				
Filling.....				
<b>Total.....</b>	<b>10</b>	<b>6</b>	<b>8</b>	<b>24</b>
<b>Orders cancelled during the month:</b>				
Minor.....		1		1
Sewer.....				
Vacating.....				
Filling.....				
<b>Total.....</b>		<b>1</b>		<b>1</b>
<b>Orders pending, September 30, 1927:</b>				
Minor.....	144	135	83	362
Sewer.....	26	51		77
Vacating.....	8	11		19
Filling.....	19	36	21	76
<b>Total.....</b>	<b>197</b>	<b>233</b>	<b>104</b>	<b>534</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	28	46	34	108
<b>Permits for minor building constructions:</b>				
Approved.....	46	44	31	121
Disapproved.....	5	5	4	14
<b>New buildings completed.....</b>	<b>12</b>	<b>31</b>	<b>31</b>	<b>74</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	2	28	12	42
Disapproved.....	4	1	4	9
<b>Prosecutions:</b>				
Convictions.....	2			2
Dismissals.....	2	1		3
Amount of fines.....	P15.00			P15.00
<b>Plumbing permits issued.....</b>	<b>46</b>	<b>77</b>	<b>62</b>	<b>185</b>
<b>Plumbing projects completed.....</b>	<b>46</b>	<b>109</b>	<b>51</b>	<b>206</b>
<b>Premises connected to the sanitary sewer to August 31, 1927.....</b>	<b>2,524</b>	<b>4,324</b>	<b>724</b>	<b>7,572</b>
<b>Connected during the month.....</b>	<b>2</b>	<b>12</b>	<b>11</b>	<b>25</b>
<b>Total.....</b>	<b>2,526</b>	<b>4,336</b>	<b>735</b>	<b>7,597</b>

NOTE.—Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

SEP 13 1927

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

OCTOBER, 1927

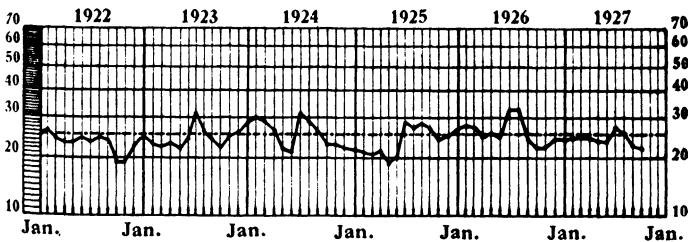
No. 10

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
LEONCIO LOPEZ-RIZAL, M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Carbon Tetrachloride Poisoning, by ANTONIO V. HERNANDEZ .....	567
Establecimiento de Dispensarios Públicos en los Barrios, por RAMÓN P. OBED .....	571
A Problem in the Misamis Public Hospital to be Presented in the Health Officers' First General Assembly .....	572
Some Points to Remember in Time of Disaster, by Major A. PARKER HITCHENS .....	573
Report of an Epidemic of Hiccup in a Family, by L. FUENTES.....	577
A Simple Hood for Use with Binocular Microscopes, by H. W. WADE	581
Miscellaneous .....	582
General Statistics .....	585

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

OCTOBER, 1927

No. 10

**CARBON TETRACHLORIDE POISONING**

By ANTONIO V. HERNANDEZ  
*District Health Officer*

Carbon tetrachloride is a colorless transparent, with ethereal characteristic liquid similar to that of chloroform. It is insoluble in water and glycerine, miscible with chloroform, alcohol and benzene; is soluble in all fixed and volatile oils. It is volatile at ordinary temperature but noninflammable.

Present studies and investigations have revealed the fact that it is an effective vermifuge especially in ankylostomiasis, but is not devoid of danger more so when used in debilitated persons, persons addicted to alcohol and in those suffering from chronic cardiac, renal, hepatic, and pulmonary diseases.

F. G. Haughwout, formerly of the Bureau of Science, in his investigation of carbon tetrachloride in connection with some intestinal parasites, stated that in the absence of certain contraindications 1 cubic centimeter C. P. of the drug for every 5.5 kilograms of the body weight is a safe dose although he further states that some authors have used this drug giving as much as from 12.5 cubic centimeters to 15 cubic centimeters without observing any serious effects. However, this should not be taken as the standard.

The Bureau of Health issued the first circular regarding the dose of this as 1 cubic centimeter for every 7 kilograms of the body weight. Amended 14 days later making the dose 0.5 cubic centimeter for every 5 kilograms of the body weight not exceeding 4 cubic centimeters and in cases when scale is not

available the dose for children is 0.2 cubic centimeter per orem for each year of age up to 15 years. For adults,  $\frac{3}{4}$  cubic centimeter.

C. Manalang of the Philippine Health Service treated 325 cases of ankylostomiasis in the Zamboanga Hospital with carbon tetrachloride in varying doses, 1 cubic centimeter for every 5.5 kilograms of body weight 200 cases. One cubic centimeter for every 10 kilograms of body weight 38 cases and a combination of carbon tetrachloride and magnesium SO<sub>4</sub> 43 cases. Nausea and Vomiting are the most common symptoms observed. Of these cases he had 2 deaths which are as follows.

*First case.*—Male 50 years old weighing 31.5 kilograms was given 5 cubic centimeters of carbon tetrachloride as there was no BM. Mg. SO<sub>4</sub>-I and S. S. enema was given 6 days later, another 5 cubic centimeters given Mg. SO<sub>4</sub>-I and enema again as there was no BM., two days after last dose patient died. Autopsy revealed, intestinal obstruction due to fecal impaction in the hepatic flexure, carcinoma of the stomach in the pyloric region. The author says that any other cathartic would have produced the same effect altho the retention of carbon tetrachloride and its absorption must also be considered.

*Second case.*—Male 50 years old with a weight of 112 pounds, was given 6 cubic centimeters of carbon tetrachloride administration. Autopsy showed, peritonitis due to perforation of gastric ulcer. In this case carbon tetrachloride may be responsible for the perforation of the ulcer due to reflex gastric and intestinal perestaysis.

The following case of poisoning that I am going to present to you is unique of its kind in that the writer himself happened to be the subject which nearly cost his life.

#### GENERAL DATA

Male, Filipino, 28 years old, married, weighing 52 kilos, district health officer by occupation, drank at 7 a. m., July 16, 1923, 9 cubic centimeters of C. P. carbon tetrachloride with water.

#### SYMPTOMOLOGY

*July 16, 1923.*—Immediately after taking the drug there were nausea, vomiting, frequent watery B. M., profuse perspiration. No abdominal pain but sensation of heaviness in the stomach.

Five hours after the medicine, nausea disappeared: Made 6 bowel movements with no visible intestinal parasite expelled. Felt better and able to take "pospas" and custard.



In the afternoon he was feeling better and was able to go home. That night he had a good sleep, but with sensation of numbness at the lower extremities.

Temperature  $38^{\circ}$  C. Then after taking the drug, the temperature dropped down to normal at 10 p. m. that day. Pulse and respiration normal.

*July 17.*—The following day he woke up with feeling of uneasiness and sensation of heaviness in the head at about 10 a. m., had slight chilly sensation followed later by a rise of temperature reaching to  $38.5^{\circ}$  C. its highest at 2 p. m.

During the day he developed periods of consciousness and unconsciousness.

During the night unconsciousness was complete accompanied by restlessness. Bowels moved with watery discharge. Urination frequent, abundant, and highly colored.

Temperature dropped down to  $37.5^{\circ}$  C. at 6. p. m.

*July 18.*—Still there was nausea and vomiting. Frequent bowel movements subsided. Urination still frequent, abundant, and highly colored. There were attacks of restlessness and unconsciousness so that medicine could not be administered. Highest temperature was  $38.7^{\circ}$  C. at 6 a. m., but dropped down to  $36^{\circ}$  C. at 12 noon. The pulse, however, persisted to rise up reaching to 116 per minute the next day at 6. a. m. In this case there was crossing of the temperature and pulse. The temperature went down while the pulse persisted to rise up which was a bad prognostic significance; respiration, 25 per minute.

*July 19.*—Apparently same condition as previous day with tendency to become worse. Restlessness and unconsciousness persisted. Hypnotics given in the evening to quieten the patient.

Temperature irregular, oscillates between  $36^{\circ}$  C. to  $38^{\circ}$  C.

Pulse and respiration gradually coming down to normal.

*July 20.*—Weak, attacks of period of restlessness, consciousness, and unconsciousness when conscious vision was hazy. Feet were cold and painful. Pulse filiform. Temperature, pulse, and respiration could not be recorded.

*July 21.*—Intervals of consciousness at this time are longer. Not so restless as before. Improving gradually. In the afternoon when he was awakened he recognized his surroundings. Slept well that evening.

*July 23.*—Apparently well, consciousness regained completely. The breath has the odor of carbon tetrachloride easily frightened and irritable. For 3 days more after this day he still felt occasional dizziness, weakness, and irritability. Bowel moved daily

by means of enema; urination was normal but highly colored. There was jaundice which lasted for 1 week, the yellowish discoloration of the conjunctivæ disappeared after 2 weeks.

#### TREATMENT

In the line of treatment there was no specific antidote given except hydrotherapy and alcohol rub for the rise of temperature over 38° C. Sodium bicarbonate magnesium and bismuth subcarbonate for irritability of the gastro-intestinal tract. Strychnine as stimulant, liniment of methyl salicylate and chloroform for sensation and numbness in the lower extremity and hypnotic of chloral hydrate and Sodium bromide.

#### SUMMARY AND CONCLUSION

1. Administration of carbon tetrachloride is not without danger even in therapeutic doses in persons with chronic diseases.

2. Individual susceptibility plays a part as cited by F. G. Haughwout as much as from 12.5 cubic centimeters to 15 cubic centimeters was given to some without any serious effects.

3. The Philippine Health Service, in view of the dangerous properties of carbon tetrachloride, issued a circular giving out a standard dose as 0.5 cubic centimeter for every 5 kilograms of body weight. When the weight is unknown three-fourths cubic centimeter for adults and 0.2 per orem for children for each year of age up to 15 years.

4. The 2 cases of deaths in the Zamboanga Hospital after carbon tetrachloride administration was partly due to the drug itself and to the chronic diseases that they were suffering. In the first case carcinoma was found in the pyloric region and in the second case peritonitis secondary to perforated gastric ulcer.

5. The most important symptoms in poisoning are the nervous and gastro-intestinal irritability as manifested by nausea, vomiting, and frequent vomiting accompanied by restlessness and periods of consciousness and unconsciousness.

Rise of temperature due inflammatory reaction in the gastro-intestinal apparatus.

Icterus due to the action of the drug in the liver and its appendages. The action similar to that of chloroform producing fatty degeneration and necrosis of the liver cells.

## ESTABLECIMIENTO DE DISPENSARIOS PÚBLICOS EN LOS BARRIOS

Dr. RAMÓN P. OBED

*Presidente, Tercera División Sanitaria, Ginobatan, Albay*

Una de las obras más notables, más humanitarias, más meritorias y que sin duda alguna no se dejaría en el olvido en el correr de los tiempos, que el Servicio de Sanidad de Filipinas ha emprendido e introducido en el Archipiélago Filipino desde su organización, es el establecimiento y mantenimiento de los dispensarios públicos en los municipios, cuyas puertas están abiertas de par en par, en días laborables y en cualquiera hora, para equéllos que necesitan de su auxilio, sobre todo a las clases menesterosas y desheredados de la fortuna. Con esta magna labor que la Sanidad ha desplegado y sigue desplegando en pro de la humanidad doliente, y en que ella, a decir verdad, es acreedora de los reconocidos bienes recibidos por el pueblo filipino, no solamente ha contribuido e influido la reducción de la mortalidad general en las Islas, sino que por medio de dichos dispensarios públicos y del personal de Sanidad que está al frente y dirección de ellos, poco a poco ha abierto el sendero y ha conseguido infiltrar en el ánimo del pueblo la fe y confianza que se merece, sobre todo a la masa ignorante e incrédula en que por mucho tiempo eran refractarios a lo que se conoce por medicamentos específicos y tratamiento racional de las enfermedades.

Prueba el hecho de que de día en día se van registrando con notorio aumento los que acuden en los dispensarios públicos, no sólo en demanda de alivio y curación de sus males, sino que muchos de ellos con inusitado empeño ruegan que se les dé algunos de los medicamentos que en dichos dispensarios públicos se distribuyen gratuitamente con el fin de distribuirlos a sus familias, a sus amigos o allegados, pues están plenamente convencidos de sus efectos curativos. Pero se puede decir que esta benéfica influencia que ejerce los dispensarios públicos

en la vida de los pueblos, solamente quedan beneficiados ciertas y determinadas personas, especialmente los que viven dentro de la población o sus cercanías, no pudiendo gozar de este privilegio los que viven en los barrios o sitios lejanos, donde en su mayoría están habitadas por gente plebe, faltos de instrucción, los caules sólo confían aliviar sus males o curar sus dolencias en manos de los curanderos charlatanes e irresponsables.

¿No sería más provechoso y humanitario que el Servicio de Sanidad de Filipinas extendiera más y más su radio de acción, procurando establecer algunos dispensarios públicos para el servicio y disposición de las personas rústicas? ¿No merecen éstos nuestra estima y consideración pues ellos constituyen parte integrante de nuestra riqueza nacional?

Aprovecho esta oportunidad en que distinguidos cerebros del Servicio están aquí presentes, presentando a su digna consideración este pequeño problema sanitario tan necesario y útil, en que su necesidad cada vez se hace sentir para aquéllos que tienen sus viviendas en los sitios rústicos o barrios. Resolviendo esto, sobre todo en lo que concierne a su establecimiento y funcionamiento, sin duda alguna ellos prodigarían a manos llenas al Servicio de Sanidad de Filipinas.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION  
PHILIPPINE HEALTH SERVICE  
FORTY-FOURTH HEALTH DISTRICT, PROVINCE OF MISAMIS  
OFFICE OF THE DISTRICT HEALTH OFFICER

CAGAYAN, January 25, 1926

**Subject: A PROBLEM IN THE MISAMIS PUBLIC HOSPITAL TO BE PRESENTED IN THE HEALTH OFFICER'S FIRST ASSEMBLY.**

1. In as much as the Misamis Public Hospital does not have a proper equipped laboratory most of our diagnosis are not complete, for they can not be well confirmed by our laboratory examination here. It is true that we could send some specimens for examination to Cebu or Zamboanga where there are real bacteriologists, but by the time the result of the examination came, the patient concerned was either dead or discharged from the hospital.

SANCHO T. MANUBAY  
*Resident Physician, Misamis Public Hospital*

## **SOME POINTS TO REMEMBER IN TIME OF DISASTER**

**Major A. PARKER HITCHENS**

1. Act quickly. Don't wait for orders from the Central Office or from anybody else. Offer your assistance at once.

2. Notify the Central Office immediately by telegram. Report as far as possible the extent of the disaster and what you think is needed.

3. Consult the local municipal committee and also get in touch with the provincial committee.

4. If you cannot communicate with the Central Office immediately, as is often the case in time of disaster, don't wait. If the people are suffering and certain needs must be supplied, get together with the local municipal committee and try to get in touch with the provincial committee or some of its officers. Make arrangements to supply the needs of the suffering people while waiting for word from the Central Office.

5. Usually the greatest need in time of disaster is for: (a) first aid, (b) food, (c) shelter, (i) clothing.

6. Establish a headquarters. Raise the Red Cross flag in a conspicuous place so that people can locate it quickly.

7. As soon as possible, in coöperation with the local committee, make a personal tour to determine the damage done by the disaster and the amount and kind of relief needed.

8. Keep the public informed of what you are doing through the newspapers, "bandillo," or any other available news agent.

9. Don't get excited. Act quickly, quietly, and with Authority.

10. IMPORTANT! Don't regard as a disaster, needing outside help, when only a few houses burn. Needs of this kind should be met locally.

## MALARIA

By MAJOR A. PARKER HITCHENS  
*Chairman, The Malaria Committee*

### To the SCHOOL TEACHERS OF MINDORO

1. Malaria is the most destructive disease which affects the Filipino people, and in this regard the Province of Mindoro is especially unfortunate.

2. Malaria directly causes the death of relatively few of its victims. The great majority of these affected with malaria do not die in a short time, but the disease develop into what is known as chronic malaria. People with chronic malaria have chills and fever and headache from time to time, feeling better in the intervals. For a day or two they may seem quite well, but they usually have a dull headache and are constantly weak and feel tired. They have little or no inclination to work and, consequently, are said to be lazy and worthless. Children with chronic malaria go to school only a part of the time and even then are likely to be dull and forgetful. Being unable to do well in school, many of them grow up to be ignorant men and women with no credit neither to their community nor to their people. Many of them die of other diseases because their bodies are too weak to be easily infected with tuberculosis or any other fatal disease to which they may be exposed.

3. Chronic malaria is preventable and it is now possible for the school teachers to take an active part in the campaign against its ravages. People who develop chronic malaria are those who have never been properly treated with quinine, possibly because quinine has not been available.

4. At present the Philippine Health Service has a small fund, a part of which can be spent for quinine to be distributed to the poor people in malarious districts, but there is so much malaria that the little money available becomes inadequate; and a part of which can be spent for quinine if only there is a source of supply. In many of the barrios of Mindoro there are no

drug stores, and where there are, such drug stores are not very close to the office of a health service doctor or sanitary inspector. The school teachers, however, come into contact with families through the school children, and the school teachers have thus a wonderful opportunity to help in the suppression of malaria.

5. In barrios where there are no drug stores that sell quinine, barrio teachers receive a supply of five-grain quinine tablets for sale to the school-children or to other persons in their respective barrios, at the rate of two centavos per tablet. This low price (of quinine) makes it possible for every individual to be properly treated with quinine. Those suffering with chronic malaria—those who are unable to work or to learn their lessons in school—may, be taking the proper doses of quinine, recover and become useful citizens and industrious pupils.

6. The administration of quinine in proper and adequate doses is a simple matter. According to their age and size, children take relatively larger doses than adults. For persons fifteen years of age and over, the doses are as follows:

*Prophylaxis.*—Persons who have not yet had malaria but living in a malarious community and who wish to avoid getting it, may do so by taking ten grains of quinine (two 5-grain tablets) every afternoon between five and six o'clock.

*Treatment.*—Persons already suffering with chills and fever should take thirty grains of quinine a day, i. e., two 5-grain tablets in the morning, two at about noon, and two between five and six in the afternoon; this means six tablets a day. If the chills and fever are really due to malaria and not to typhoid fever, or tuberculosis, or something else, the fever will disappear within three to five days, provided thirty grains of quinine have been taken faithfully every day.

*Prevention of relapse.*—In order that all the malaria parasites in the body may be destroyed, it is necessary for the patient to continue taking quinine. If some of the parasites remain in the body, relapses may occur and chronic malaria may develop. To avoid this a person who has had chills and fever must continue to take ten grains of quinine (two 5-grain tablets) every day between five and six o'clock in the afternoon, for eight weeks.

7. The doses of quinine for children may be tabulated as follows (the doses for adults are also included in order that the table may be complete) :

*Dose table of quinine for malaria*

	One year	Three years	Six years	Ten years	Fifteen years and over
<b>PROPHYLAXIS</b>					
One dose a day between 5 and 6 p. m.	0.5 grain or $\frac{1}{10}$ tablet	1 grain or $\frac{1}{5}$ tablet	$\frac{3}{4}$ grain or $\frac{3}{8}$ tablet	5 grains or 1 tablet	10 grains or 2 tablets
<b>TREATMENT (1)</b>					
Three doses a day 1 p. m. and 5 p. m.	1.5 grains or $\frac{3}{10}$ tablet	3 grains or $\frac{3}{5}$ tablet	7.5 grains or $1\frac{3}{4}$ tablet	15 grains or 3 tablets	30 grains or 6 tablets
<b>PREVENTION OF RELAPSES</b>					
One dose a day between 5 and 6 p. m.	0.5 grain or $\frac{1}{10}$ tablet	1 grain or $\frac{1}{5}$ tablet	2.5 grains or $\frac{1}{2}$ tablet	5 grains or 1 tablet	10 grains or 2 tablets

The quantity given in each column under treatment is the quantity for the day and not for each dose. Divided by three, the number of doses to be taken during the day, to obtain the amount required for each dose.

It is not intended that the tablets must be divided with great accuracy.

In order to obtain the small doses for young children, the tablet may be crushed and the powder divided into 5 or 10 (according to the fraction required) little piles of about equal size. It is also possible to cut the tablet with a knife into 2 or 5 or 10 pieces of fairly equal size.

8. The plan of making quinine available to all the people in malarious districts through the school teachers is being put into effect in Mindoro before it is tried anywhere else. Everyone interested in the welfare of the people is convinced that availability of quinine is vitally important, and everyone feels that the school teachers as a class can probably be depended upon to handle so important a matter more intelligently and more systematically than any other group of persons in the provinces. It is believed confidently this opportunity to do a great patriotic service which will add so little to their usual duties.



## REPORT OF AN EPIDEMIC OF HICCUP IN A FAMILY

By L. FUENTES

*District Health Officer*

Altho medical men are quite aware of the grave significance of hiccup when associated with a chain of symptoms, such as in typhoid fever, uræmia and other serious illness, yet hiccup alone is so common, so trivial, and apparently of no serious affect that seldom, if ever, draws the attention of the laymen as well as of the physician.

However, the striking hiccup outbreak in a family of eight I have observed, has made him think of the importance that this so trivial symptom may sometimes have to the medical man especially to the sanitarians.

The following is the history of the first case observed:

### CASE I.

C. T., Chinese, 60 years old, resident of Surigao, merchant, married, was taken sick of fever catarrh, painful joints (influenza) on August 17. On August 27, 10 days after the onset of the illness he asked for medical attendance on account of the persistent hiccup that troubled him much for about three days even during sleep.

The patient has had renal trouble, which according to the physicians who had treated him about two years ago, it was a nephritis.

The actual illness begun about 10 days before the first visit, three days after his return from Cebu. The beginning was a severe headache, painful joints, severe catarrh, and very high fever. He was treated by a Chinese druggist, but apparently without any good result. On August 23 he begun taking aspirine one tablet every four hours, and the headache was relieved, although, on the next day, it reappeared with some gastric distress and in the night of the 24th, begun the hiccup and continued till the first visit. Bowel-movements only by enema. Urination scanty. Temperature at the time of visit 38° C., respiration seems normal; pulse 70 per minute, regular and big.

Lungs, clear. Heart sound doubling of the systolic sound. Blood pressure, 160-systolic and 120 diastolic. Urine scanty, very acid reaction and positive to albumen; no microscopical examination was made. Sleep very poor on account of the hiccup which continues day and night. The general condition of the patient is very weak on account of the lack of sleep and the diet which, since he was taken sick, was mongo broth and very little oatmeal. Profuse cold perspiration.

*Diagnosis.*—Influenza with nephritis complicated with toxemia. Immediate attention was given to relieve the patient from the toxemia and after 12 hours a profuse diuresis was noted. On the second day of treatment, the patient reports that he felt relief of the general weakness. The hiccup disappeared the night before, but it reappeared early in the morning and it is more intensive and complains of pain in the pigastrum and hipocondriums. Forced inspiration and expiration, abdominal bandage, mustard poultice over the epigastium were found of no effect.

Two hours after the second visit (August 28) the undersigned was again urgently called by the family, because the hiccup was so severe that the patient could hardly breath. The fever was gone, and all the trouble was the hiccup, so all the treatment was directed toward the suppression of the hiccup. Tansan water was given but of no avail. In the afternoon of the same day (August 28), the patient complained of hyperesthesia of the scalp and the hiccup was much severer; XV drops of Adrenalin sol. IXI,000 was given every 4 hours and after the first dosis, the hiccup subsided for about 4 hours.

On the third day of treatment, August 29, at about 8 a. m. hiccup was so severe that the patient could hardly breath. Urine was not passed since about 5 p. m. of the previous day; the pulse was very weak and rapid, face clumsy; myoclonic spasm of the muscles of the abdomen and extremities was noted and at 9 a. m. become comatous and about two hours later he died.

The Hiccup in this case was formerly considered as a common manifestation of toxemia. But six days later, the wife who had taken care of the patient during his illness, had slight fever, painfull joints, severe headache, mild catarrhal symptoms and hiccup. With the sad experience of her husband, on the second day from the onset, when a dose of purgative taken on the previous day failed to give any relief, she requested medical attendance. The history follows:

## CASE II

W. T., female, Chinese, 43 years old, merchant, married, visited on September 5, 1926, complaining of fever, mild catarrhal symptoms, painful joints, and hiccup.

Attended her husband who died 7 days ago of influenza.

*Present condition.*—Fairly nourished, temperature 38.6° C., pulse normal, moved bowel early in the morning urin normal. Upon examination, lungs were found clear on percussion, on auscultation coarse rales heard in both pulmonary areas. Digestive organs: tongue clean, nothing abnormal in the stomach or intestines. Nervous system: in good condition without any abnormality noted in the reflexes. The only trouble noted was the hiccup. which according to the patient has been so persistent that she could hardly sleep the previous night; the intensity on the time of the first visit was strong and frequent, the purgative taken on the previous day that had a very good effect, did not relieve the hiccup.

*Diagnosis.*—Influenza with slight bronchitis.

Mechanical measures were tried to control the hiccup, but all proved to be ineffectual. Cryogenine, aspirine with caffeene citrate were given every three hours with tansan water.

On September 6, the fever entirely subsided, and all the symptoms but hiccup were entirely relieved. The pulse has fallen to 66 per minutes, but normal in rythm. Full dosis of quinine sulphate with caffeine citrate were prescribed 4 times a day and after the third dosis, the hiccup disappeared.

On the second day of treatment of this Case II, another two cases of hiccup were registered in the same house and three days after the fifth case and one day after this fifth case, the sixth, seventh, and eighth cases were registered.

Of these six last cases, the youngest is 8 years old and the eldest is 22 years old. The illness begun with fever in two cases of these six last; while in the rest, a general malaise was the only symptom observed. The hiccup appeared from two to four hours after the onset of the illness. Hyperesthesias in the face, thorax and extremities were observed in four cases. The pulse varied from 66 to 74 per minute and only in a case, that of a child 13 years old, the pulse was only 60. The shortest duration of the illness was 3 days and the longest was 10 days. In all cases the disappearance of the hiccup was gradual, decreasing in frequency and intensity, except in one case which was sudden.

The treatment was very varied, from the most simple remedy. Suggestion; ice water, drunk rapidly; to the more complicated stomach, lavage were resorted to with very little effect. Of the medicinal agents, quinine, valerian, benzylbenzoate, apomorphine, ipcac were used all with very doubtful effect. And in a case, that of a girl of 16 years of age, the hiccup was so obstinate that even morphine proved to be inefectual, while through the suggestion of a friend, inhalation of the vapor coming from the mixture of equal parts of water and vinegar with the whole plant, including the roots of the commonly called "ganda" plant in this locality, all heated together to almost the boiling point, was ordered with immediate relief, the hiccup disappearing suddenly after 15 minutes of inhalation. However, this same measure failed to give any effect in two other cases.

Since the appearance of the III and IV cases, although the nature of the disease was not clearly determined, the family was requested not to admit any visitor and it was suggested the closing of the store the family has, which were all accomplished.

What was the real nature of this hiccup outbreak in this family? Taking the cases separately, we may fail to realize its importance, but taking all the cases together and the relation of contact each case has had to another, we would naturally think that the hiccup in this outbreak is but a manifestation of a contagious disease, which judging from the clinical stand point of view seem to be of influenzal origin. Unfortunately, the laboratory facilities in the Province of Surigao is so limited that no cultures were taken from the secretion or any blood examination was performed.

The neuropathic nature of the disease might be suspected, but if we take into consideration that all the family, including a child 8 years old was affected, while the two female servants who had been also with the family but did not have a close contact with the cases were not, this suspicion can not be sustained on a firm basis. Unfortunately the very limited literature on hand at that time has failed to show a definite relation of the malady, except a short article regarding "epidemic hiccup" in the Sajous's Analytic Cyclopedia, apparently considering the disease as one of the numerous manifestation of the epidemic encephalitis or very closely related to it.

From the above related experience, we can draw the following conclusions:

(a) The hiccup may appear in epidemic form.

(b) Although prognosis is in most instances favorable, it is important for both the physician and sanitarian to take the necessary measure to prevent its spread, taking into consideration the relation which other writers point between this epidemic hiccup and the epidemic encephalitis.

(c) As far as to the clinical symptoms, the hiccup family epidemic observed and noted above is but one of the numerous manifestation of the influenza.

(d) Whatever the nature of the disease might be, it is worthwhile studying any case, that one might come across with, especially when hiccup attacks an unusual number of persons, and definite relation from one case to another can be established.

## A SIMPLE HOOD FOR USE WITH BINOCULAR MICROSCOPES <sup>1</sup>

By H. W. WADE, M.D.

*Culion Leper Colony, P. I.*

Use of the hood described is advantageous in several respects. If properly fitted to the user it eliminates incidental light practically completely. This not only minimizes fatigue of the retina, but permits restful relaxation of the muscles of the eyelids, which automatically contract in consequence of such light. There being no conflicting light, the microscopic image stands out with greater crispness and apparent definition. Concentration on the work in hand is facilitated by elimination of visual perception of movements in the room about one. An important feature is that the shield automatically maintains proper orientation of the head; this and the support obtained by even light contact of the forehead with it, relieve markedly fatigue of the neck. Adjustment of inter-pupillary distance is scarcely interfered.

---

<sup>1</sup> From the Pathological section, Culion Leper Colony, Philippine Health Service. Published with the permission of the Director of Health.

## MISCELLANEOUS

### DAVAO

One of the most interesting events during the month is the opening of a new public dispensary at Hijo, municipal district of Tagum. Smallpox vaccination campaign was also launched at Batulaki district where quite a big number of persons were vaccinated.

It was discovered that trachoma was prevalent among school children of Asmal School and those affected were advised to go to the hospital for treatment.

The malaria control work at Kingking, Pantukan, and Southern Cross Plantation were visited and larvæ were found in the streams of these places. Written instructions were given to the sanitary inspector in charge of the work regarding the effective method of spraying Paris green. The malaria control work at Santa Cruz and Guianga were found satisfactory.

### CAMARINES NORTE

In Basud and San Vicente, cases of dysentery were registered, but in view of the adoption of preventive measures, the disease was sooner stamped out.

### ILOCOS SUR

It is gratifying to note that approximately 75 per cent of the house in Vigan are now provided with Antipolo closets. There were some instances, however, in which judicial intervention was necessary to enforce the local ordinance on this subject. All violators of the sanitary ordinance were invariably convicted by the court of justice.

Most of the municipalities inspected during the month were satisfactory with the exception of Narvacan where straying pigs were seen. The corresponding authorities were duly advised to remedy the situation.

### BATAAN

In order to conduct effectively the sanitary campaign and malaria campaign in Limay, the district health officer assisted by two sanitary inspectors stationed themselves in the municipality from October 17 to October 22, inclusive. It is gratifying to report that at the beginning of the campaign many loose pigs in the *población* were found, but after administering poison to two of them and caused the prosecution of about 12 persons, the town was entirely rid of this nuisance.

House-to-house inspections and giving orders as to general cleanliness of premises and yards together with a survey of those houses in which Antipolo closets can be installed, were considered the important phases of the work in connection with the campaign.

One hundred fifty-seven blood smears were taken from school children in the Limay Elementary School and samples of *Anopheles* larvæ were collected from different streams and other sources.

## CEBU

*Balamban.*—In this municipality a sanitary contest has been held in connection with the celebration of the town fiesta. During the festivity, anticholera and antityphoid vaccinations were performed.

*Opon.*—In this locality, some *tuba* vendors were found using insanitary containers. Proper instruction has been issued to the personnel to correct this irregularity. Prompted by the outbreak of dysentery epidemic, an intensive campaign on general sanitation and immunization with mixed vaccine has been accomplished during the month. To facilitate this work, two district nurses have been assigned to help the president of the Sanitary Division.

## LANAO

On October 26, the district health officer conferred with the district auditor regarding the compensation of two *datus* who acted as helpers in the vaccination campaign. The sum of ₱200 was secured from the provincial general fund for this purpose.

## ANTIQUÉ

The Culasi Water System was inaugurated during the month. There are now three municipalities having good water system in the province, namely San Jose, Bugason, and Culasi.

## SORSOGON

In an inspection trip made at Bulan and Donsol, 400 persons including students and outsiders were given injections against cholera. Vaccination of children especially those under 1 year of age was performed.

A campaign against straying animals, particularly dogs, was launched in several towns of the province, including the provincial capital in which place many dogs were killed.

Slides for the prevention of beriberi were exhibited in the cinematographs of different towns.

## PANGASINAN

In compliance with the request of Municipal Council of Umingan, the district health officer has established a traveling trachoma clinic which operates from Natividad to Umingan. Doctor Vergara was detailed to take charge of this work. The sum of ₱150 was set aside to maintain this clinic.

Yaws campaign was launched at Binalonan on October 18th. Yaws patients were given neosalvarsan injections, the majority of whom were infants.

The hookworm campaign is now in full swing in Mangatarem.





## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of October, 1926]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1927<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	294,137
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,858
All others.....	2,186
<b>Total.....</b>	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I, METSIC:</b>	
1. Tondo.....	80,745
2. San Nicolas.....	29,168
3. Binondo.....	17,625
<b>Total.....</b>	<b>127,538</b>
<b>No. II, SAMPALOC:</b>	
1. Santa Cruz.....	52,238
3. Quisapo.....	15,862
6. San Miguel.....	4,484
7. Sampaloc.....	39,698
<b>Total.....</b>	<b>112,282</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,816
9. Intramuros.....	14,625
10. Ermita.....	16,139
11. Malate.....	16,471
12. Paco.....	16,037
13. Pandacan.....	5,861
14. Santa Ana.....	6,675
<b>Total.....</b>	<b>80,624</b>
<b>Grand total.....</b>	<b>320,394</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, OCTOBER, 1927**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	756.36	26.6	33.4	2	22.6	4	29.8	29.5
11-20.....	60.42	26.4	32.4	15	22.4	17	29.4	29.5
21-31.....	59.22	26.3	33.0	23	21.5	30	29.5	29.7

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	84.1	92.6	9	77.0	4
11-20.....	84.2	88.5	20	81.2	15
21-31.....	82.2	88.5	21	77.9	30

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	NE, SE	2,279.0	471.0	9	20.7	4.0	1
11-20.....	NE, E	984.0	127.5	11	23.4	3.7	17
21-31.....	E quad	1,121.5	150.0	23	30.5	4.2	27

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	37 50	8 55	1	181.4	8
11-20.....	54 45	9 55	17	32.5	6
21-31.....	49 00	7 00	30	20.1	5

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

# NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rate per 1,000
Americans.....	4	12	16	60.15
Filipinos.....	637	612	1,249	50.03
Spaniards.....	1	1	2	6.03
Other Europeans.....	4	5	9	94.17
Chinese.....	36	35	71	46.85
All others.....	7	4	11	59.29
Total and average.....	688	669	1,357	49.90

# NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I, MEISIC:							
1. Tondo.....	171	159	330	4	12	16	346
2. San Nicolas.....	52	45	97	4	3	7	104
3. Binondo.....	80	28	58	1	3	4	62
Total.....	253	232	485	9	18	27	512
No. II, SAMPALOC:							
4. Santa Cruz.....	75	91	166	5	9	14	175
5. Quiapo.....	19	21	40	3	2	5	45
6. San Miguel.....	16	16	32	1	1	2	34
7. Sampaloc.....	114	93	207	4	9	13	220
Total.....	224	221	445	13	16	29	474
No. III, PACO:							
8. Port Area.....	1	1	2				2
9. Intramuros.....	27	19	46	2		2	48
10. Ermita.....	33	46	79		1	1	80
11. Malate.....	62	51	113	2	3	5	118
12. Paco.....	32	31	63	3	5	8	71
13. Pandacan.....	14	14	28		1	1	29
14. Santa Ana.....	12	9	21	1	1	2	23
Total.....	181	171	352	8	11	19	371
Grand total.....	658	624	1,282	30	45	75	1,357

Attended by physicians, living, 455; stillbirths, 20.

Attended by midwives, living, 103; stillbirths, 0.

Attended by families, living, 799; stillbirths, 25.

# NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	3		3	11.28
Filipinos.....	314	254	568	22.75
Spaniards.....	3	1	4	24.11
Other Europeans.....				
Chinese.....	21	3	24	15.84
All others.....	3	1	4	21.56
Total and average.....	344	259	603	22.17

## NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA

## BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MERISIC:</b>			
1. Tondo.....	103	84	187
2. San Nicolas.....	35	14	49
3. Binondo.....	11	8	19
Total.....	149	106	255
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	57	38	90
5. Quiapo.....	10	3	13
6. San Miguel.....	5	7	12
7. Sampaloc.....	45	44	89
Total.....	117	87	204
<b>No. III, PACO:</b>			
8. Port Area.....			
9. Intramuros.....	16	7	23
10. Ermita.....	7	8	15
11. Malate.....	31	24	55
12. Paco.....	14	9	23
13. Pandacan.....	4	10	14
14. Santa Ana.....	6	8	14
Total.....	78	66	144
Grand total.....	344	259	603

NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	108	77
Divorced.....		
Widowed.....	29	61
Single.....	278	160
Conditions not stated.....	4	1
Total.....	419	299
Grand total.....	718	

Stillbirths, 45.

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	112	74	7	3	196
1 year plus.....	17	19	3	2	41
2 years plus.....	10	12	2	1	25
3 years plus.....	5	3	3	3	14
4 years plus.....	4	6	2	.....	12
5 to 9 years.....	12	9	4	.....	25
10 to 14 years.....	7	1	1	1	10
15 to 19 years.....	16	9	7	6	38
20 to 24 years.....	25	13	5	6	49
25 to 29 years.....	22	14	8	5	49
30 to 34 years.....	14	9	2	1	26
35 to 39 years.....	11	14	7	1	33
40 to 44 years.....	4	10	7	2	23
45 to 49 years.....	10	9	4	2	25
50 to 54 years.....	11	3	4	2	20
55 to 59 years.....	16	6	3	2	27
60 to 64 years.....	13	9	2	.....	24
65 to 69 years.....	10	4	1	.....	15
70 to 74 years.....	13	4	.....	1	18
75 to 79 years.....	7	9	.....	.....	16
80 to 84 years.....	1	8	3	.....	12
85 to 89 years.....	.....	3	.....	.....	3
90 to 94 years.....	2	7	.....	1	10
95 to 99 years.....	.....	4	.....	1	5
100 years and over.....	2	.....	.....	.....	2
Age not stated.....	.....	.....	.....	.....	.....
Total.....	344	259	75	40	718

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1926)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....			8	4					4		1		17
7	Malaria:													
10	a. Malarial fever.....			1	1									2
11	Measles.....			1	1									2
	Diphtheria.....			1	2									3
	Influenza:													
	a. With pulmonary complications specified													
	b. Without pulmonary complications specified			1	2					3				5
16	Dysentery:													
	a. Bacillary.....			2	3									5
	b. Unspecified or due to other causes.....			5	1									6
21	Erysipelas.....			1										1
22	Acute anterior poliomyelitis.....			1										1
24	Meningococcus meningitis.....										1			1
29	Tetanus:													
	a. Umbilical.....													
	b. Others.....			2	2									4
31	Tuberculosis of the respiratory system.....			68	67					6		1		142
32	Tuberculosis of the meninges and central nervous system			7	3									10
33	Tuberculosis of the intestines and peritoneum.....			1	1					1				3
34	Tuberculosis of the vertebral column.....			1	1									2
36	Tuberculosis of other organs:													
	c. Tuberculosis of the lymphatic system (mesenteric and retroperitoneal glands excepted)			1										1
37	Disseminated tuberculosis:													
	b. Chronic or unspecified.....			2	1									3
41	Purulent infection, septicemia.....													
43-69	<i>II. General diseases not included in Class I</i>													
44	Cancer and other malignant tumors of the stomach, liver			5	1									6
49	Cancer and other malignant tumors of other or unspecified organs.....			2								1		3
50	Benign tumors and tumors not returned as malignant (tumors of the female genital organs excepted)			1										1

52	Chronic rheumatism, osteoarthritis, gout	1	1	1	1
53	Scurvy	1			
55	Beriberi:				
	a. Infants	10	6		
56	Rickets		2		
60	Diseases of the thyroid gland:				
	a. Exophthalmic goiter	1			
70-86	III. Diseases of the nervous system and of the organs of special sense				
71	Meningitis:				
	a. Simple meningitis	3	4		
74	Cerebral hemorrhage, apoplexy:				
	a. Cerebral hemorrhage	4	6	1	
75	Paralysis without specified cause:				
	a. Hemiplegia	2	1		
76	General paralysis of the insane	1			
77	Other forms of mental alienation	2			
84	Other diseases of the nervous system	2			
87-96	IV. Diseases of the circulatory system				
88	Endocarditis and myocarditis (acute)	4		1	
89	Angina pectoris		1		
90	Other diseases of the heart	7	4	1	
97-107	V. Diseases of the respiratory system				
99	Bronchitis:				
	a. Acute	10	9		
	b. Chronic	3	4		
100	Bronchopneumonia:				
	a. Bronchopneumonia	35	24	2	
	b. Capillary bronchitis		1		
101	Pneumonia:				
	a. Lobar	8	6		
102	Pleurisy	2	4		
105	Asthma		1		
107	Other diseases of the respiratory system (tuberculosis excepted):				
	c. Others under this title	1			

NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

(Stillbirths not included)

International numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
108-127	<i>VI. Diseases of the digestive system</i>													
111	Ulcer of the stomach and duodenum:													
112	a. Ulcer of the stomach:													
113	Other diseases of the stomach (cancer excepted)			1										1
114	Diarrhea and enteritis (under 2 years of age)			12	1									13
115	Diarrhea and enteritis (2 years and over)			5	3									8
116	Appendicitis and typhilitis			3	1									4
117	Hernia, intestinal obstruction:													
118	b. Intestinal obstruction													
122	Cirrhosis of the liver:													1
124	b. Not specified as alcoholic.													
128-142	<i>VII. Nonvenereal diseases of the genito urinary system and annexa</i>			1										1
128	Other diseases of the liver:													1
129	Acute nephritis (including unspecified under 10 years of age)			4	3									7
131	Chronic nephritis (including unspecified 10 years and over)	1		6	14	1								22
139	Other diseases of the kidneys and annexa.			1										1
143-150	Benign tumors of the uterus.				2									2
144	<i>VIII. The puerperal state</i>													
146	Puerperal hemorrhage.													
151-154	Puerperal septicemia.				2									2
152	<i>IX. Diseases of the skin and of the cellular tissue</i>				1									1
153	Furuncle.			1										1
154	Acute abscess.			1										2
159-	Other diseases of the skin and annexa.				1									1
159	<i>XI. Malformations</i>													
169	Congenital malformations (stillbirths not included):													
	b. Congenital malformations of the heart.													1







III. Diseases of the nervous system and of the organs of special sense

71	Meningitis:	1	1	1
	a. Simple meningitis.....			
74	Cerebral hemorrhage, apoplexy:			
	a. Cerebral hemorrhage.....	1		
	b. Cerebral embolism and thrombosis.....	1		
77	Other forms of mental alienation.....	1		
84	Other diseases of the nervous system.....	1		

IV. Diseases of the circulatory system

87-96	Other diseases of the heart.....	1	2	4
-------	----------------------------------	---	---	---

V. Diseases of the respiratory system

97-107	Bronchitis:			
	a. Acute.....	1		
100	Bronchopneumonia:			
	a. Bronchopneumonia.....	6	2	
101	Pneumonia:			
	a. Lobar.....	10		1

VI. Diseases of the digestive system

108-127	Ulcer of the stomach and duodenum:			
	a. Ulcer of the stomach.....	1		
	b. Ulcer of the duodenum.....	1		
112	Other diseases of the stomach (cancer excepted):			
113	Diarrhea and enteritis (under 2 years of age).....	2		
114	Diarrhea and enteritis (2 years and over).....	1		
117	Appendicitis and typhlitis.....	2	1	
118	Hernia, intestinal obstruction:			
	a. Hernia.....	1		
	b. Intestinal obstruction.....	1		
124	Other diseases of the liver.....	1	1	

VII. Nonvenereal diseases of the genito urinary system and annexa

128-142	Acute nephritis (including unspecified under 10 years of age).....	1	1	
128	Chronic nephritis (including unspecified 10 years and over).....	1		
131	Other diseases of the kidneys and annexa.....	1		
139	Benign tumors of the uterus.....	1		
141	Other diseases of the female genital organs.....	1		

VIII. The puerperal state

143-150	Puerperal hemorrhage.....		2	
144	Other accidents of labor:			
145	c. Others under this title.....	1		

## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>													
151	Gangrene.....			1										1
152	Furuncle.....			2										2
153	Acute abscess.....				1									1
154	Other diseases of the skin and annera.....			1	1									2
155-158	<i>X. Diseases of the bones and of the organs of locomotion</i>													
156	Diseases of the joints (tuberculosis and rheumatism excepted).....			1										1
159-	<i>XI. Malformations</i>													
159	Congenital malformations (stillbirths not included):													
	c. Others under this title.....			1										1
160-163	<i>XII. Early infancy</i>													
160	Congenital debility, icterus, and sclerema.....				1									1
164-	<i>XIII. Old Age</i>													
164	Senility.....			2	2									4
165-203	<i>XIV. External causes</i>													
166	Suicide by corrosive substances.....				1									1
179	Accidental burns (conflagration excepted).....			1										1
182	Accidental drowning.....			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landlides, etc.):													
	c. Automobile accidents.....			1										1
198	Homicide by cutting or piercing instruments.....			1										1
199	Homicide by other means.....			1										1
	<b>Total.....</b>	1		70	40	1		2				1		115
	<b>Grand total.....</b>	1		110		1		2				1		115

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF OCTOBER, 1927 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month		
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 31 days				
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
All causes.....	119	77	15	9	17	12	9	11	11	2	4	1	56	35
COMMUNICABLE DISEASES:														
Typhoid and paratyphoid fever (1)														
Smallpox (6)														
Measles (7)														
Whooping-cough (9)														
Diphtheria (10)														
Influenza (11)	1													
Asiatic cholera (14)														
Dysentery (16)														
Meningococcus meningitis (24)		2												
Other epidemic and endemic diseases (25)		1												
Tetanus (29)		2				2								2
Other infectious diseases (1-42) <sup>1</sup>		1	1		3	2		2	1		1		5	4
Beriberi (55)	11	6												
Diseases of the nervous system (70; 71; 80; 85)	2	1												
Respiratory diseases (99; 100; 101; 107)	34	22			2	1		2	1	2	1		4	6
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)	9	9						1	1	1			1	1
Congenital malformation (159)	1	1												
Early infancy (160; 161; 162; 163)	52	26	15	9	12	7	7	5	8		1	1	43	22
All other causes (43-205) <sup>1</sup>	8	6											2	

<sup>1</sup> Other than those specified above.

Number in parenthesis are the corresponding numbers in the international list of causes of death.

**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF OCTOBER, 1927 (INCLUDING TRANSIENTS)**

Causes of death	Age at death under 1 year																						Total under 1 year
	1 month +		2 months +		3 months +		4 months +		5 months +		6 months +		7 months +		8 months +		9 months +		10 months +		11 months +		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All causes.....	15	8	5	5	12	3	5	5	1	5	3	3	3	2	5	2	3	6	4	3	2	63	42
COMMUNICABLE DISEASES:																							
Typhoid and paratyphoid fever (1)																							
Smallpox (6)																							
Measles (7)																							
Whooping-cough (9)																							
Diphtheria (10)																							
Influenza (11)																							
Asiatic cholera (14)																							
Dysentery (16)																							
Meningococcus meningitis (24)																							
Other epidemic and endemic diseases (25)																							
Tetanus (29)																							
Other infectious diseases (1-42)																							
Beriberi (55)	4	1			1									1						1	1	1	6
Diseases of the nervous system (70; 71; 80; 86)																							
Respiratory diseases (99; 100; 101; 107)	2	2	1	2	4	2	3	2		3	3	2	3	1	4	1	4	1	2	1	3	1	2
Gastro intestinal diseases (108; 109; 113; 115; 116; 127)		1		2	3		1	1	1	1					1	1	1	1	2	1			
Congenital malformation (159)																							
Early infancy (160; 161; 162; 163)	7	3	2	1	4	1																	
All other causes (43-205)	2	1					2	2	1	1										1		6	

## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	21,576
Number of rats caught by spring traps.....	3,079
Number of cage wire traps set.....	620
Number of rats caught by cage wire traps.....	2
Number and kind of baits (coconuts).....	22,816
Number of poison portions placed.....	19,643
Number of rats found poisoned.....	334
Number of rats killed by clubs and other weapons.....	1,002
Number of rats found dead from other causes.....	466
Total number of rats otherwise caught, found dead or killed.....	4,883
Total number of rats sent to the laboratory for examination.....	4,883
Total number of rats found positive or plague.....	0

---

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF OCTOBER, 1927, CITY OF MANILA**

**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total			
	Male		Female		Male		Female		Male		Female					
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	No. 1.....	6	1												2	
	No. 2.....	6	6	1											6	
	No. 3.....	1	1			1	1								1	
	No. 4.....	5	2	3	2										1	
	No. 5.....	1	1												1	
II.....	No. 6.....	3	1												4	
	No. 7.....	1	1												1	
	No. 8.....			4	1										1	
	No. 9.....	4													1	
	No. 10.....	1		1	1										1	
III.....	No. 11.....			1											1	
	No. 12.....			1											1	
	No. 13.....	1													1	
	No. 14.....														1	
	Grand total .....	28	12	13	4	1	1					29	13	13	4	42

**REMARKS:**

Cases reported as typhoid fever..... 42  
 Cases reported as paratyphoid fever..... 0  
 By autopsy..... 0  
 By blood culture..... 0  
 By Widal reaction..... 15  
 By urine examination..... 0  
 By feces examination..... 0  
 By clinical symptoms..... 27  
 Cases reported among nonresident persons not included in the table..... 19  
 Deaths reported among nonresident persons not included in the table..... 8

Typhoid carrier—1



DISYNTERIES REPORTED DURING THE MONTH OF OCTOBER, 1927, CITY OF MANILA

601

CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total			
	Male			Female			Male			Female			Male			Female			Cases		Deaths	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.	No. 1.....	1	1	1	1		2	2		1	1		3	3		2	2		5	5		
	No. 2.....																					
	No. 3.....																					
	No. 4.....	2		2	2		2	2					4	2		2	2		6	4		
II.	No. 5.....																					
	No. 6.....	1	1							1	1		1	1		2	1		1	1		
	No. 7.....			1																		
	No. 8.....																					
	No. 9.....																					
	No. 10.....																					
III.	No. 11.....																					
	No. 12.....																					
	No. 13.....						1	1					1	1		1	1		1	1		
	No. 14.....																					
	Grand total .....	4	2	5	3		5	5		2	2		9	7		7	5		16	12		

REMARKS:

Amoebic dysentery..... 0  
 Bacillary dysentery..... 8  
 Unspecified..... 8  
 Cases reported among nonresident persons not included in the table..... 8  
 Deaths reported among nonresident persons not included in the table..... 5  
 Dysentery carrier—1

CHOLERA REPORTED DURING THE MONTH OF OCTOBER, 1927, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital						Home				Total				Grand total	
	Male		Female				Male		Female		Male		Female		Cases	Deaths
I. { No. 1. ....	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
No. 2. ....																
No. 3. ....																
No. 4. ....																
II. { No. 5. ....																
No. 6. ....																
No. 7. ....																
No. 8. ....																
No. 9. ....																
III. { No. 10. ....																
No. 11. ....																
No. 12. ....																
No. 13. ....																
No. 14. ....																
Grand total																

## REMARKS:

No nonresident case was reported during the month.

Cholera carrier—12

DIPHTHERIA REPORTED DURING THE MONTH OF OCTOBER, 1927, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total			
	Male		Female		Male		Female		Male		Female	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I... { No 1..... { No 2..... { No 3..... { No 4..... { No 5..... { No 6..... { No 7..... { No 8..... { No 9..... { No 10..... { No 11..... { No 12..... { No 13..... { No 14.....	2	1	2	2					2	2	2	2
II..	2						2		1		1	
III..	1	1					1	1				1
Grand total.....	3	1	4	2			3	1	4	2	7	3

REMARKS:

Cases reported among nonresident persons not included in the table.

Deaths reported among nonresident persons not included in the table.

Diphtheria carrier—4

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF OCTOBER, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	5	2	1	1
Varicella.....	1			
Varioloid.....				
Smallpox.....				
Measles.....		1		1
Whooping cough.....				
Influenza.....	10	5	5	2
Bubonic plague.....				
Encephalitis lethargica.....		1		1
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	152	146	75	67
Tuberculosis of other organs.....	18	4	13	4
Beriberi, infantile.....	10	6	10	6
Beriberi, adult.....	1			

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	24	8	1	1
Varicella.....				
Varioloid.....				
Smallpox.....				
Measles.....				
Whooping cough.....				
Influenza.....	1			
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....	2		1	
Tuberculosis of the respiratory organs.....	17	8	8	5
Tuberculosis of other organs.....	1	1	1	1
Beriberi, infantile.....	1		1	
Beriberi, adult.....				

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINE FOR THE  
MONTH OF OCTOBER, 1927**

Sera and vaccines	On hand October 1, 1927	Received during the month	Total to be accounted for	Distrib- uted during the month	Remaining at the end of the month
Anti-diphtheric serum (units).....	650,000	500,000	1,150,000	360,000	790,000
Anti-dysenteric serum (ampoules).....	42	203	242	210	32
Anti-tetanic serum (units).....	550,000	500,000	1,050,000	450,000	600,000
Cholera vaccine (c.c.).....	6,000	60,000	66,000	50,100	15,900
Dried vaccine virus (units).....	134,100	50,000	184,100	81,200	102,900
Dysenteric vaccine (c.c.).....	3,000	42,000	45,000	40,800	4,200
Fresh vaccine virus (units).....	211,700	100,000	311,700	177,500	134,200
Gonococcus vaccine (ampoules).....		100	100	100	
Mixed Typhoid Cholera vaccine (c.c.).....	38,100	180,000	218,100	183,000	35,100
Normal Horse Serum (ampoules).....					
Typhoid vaccine (c.c.).....	20,520	12,000	32,520	21,000	11,520

Health districts	Municipal districts	Total vaccinations	Vaccinations			Inspections of persons vaccinated						Total
			Previously vaccinated			Under 1 year		1 to 4 years		5 years and over		
			Never	Successfully	Unsuccessfully	Positive	Negative	Positive	Negative	Positive	Negative	
No. 1.....	Tondo.....	431	349		82	513	35	9			522	35
	San Nicolas.....	525	98	418	9	53	10	10			63	10
	Binondo.....	179	171		8	58	20	11			69	20
	Santa Cruz.....	893	140	729	24	160	10		374	70	534	80
No. 2.....	Quisapo.....	66	56		10	30	1				30	1
	San Miguel.....	51	42		9	30	1				30	1
	Sampaloc.....	424	298	70	56	322	38	85			407	38
	Port Area.....											
No. 3.....	Intramuros.....	52	43		9	56	15				56	15
	Ermita.....	253	46	195	12	109	13				109	13
	Malate.....	97	83		14	92	2				92	2
	Paco.....	85	73		12	71	10	32	126	61	229	71
	Pandacan.....	42	37		5	32	5				32	5
	Santa Ana.....	137	103		34	38	9				38	9
	Grand total.....	3,235	1,539	1,412	284	1,564	169	147	500	131	2,211	300

## VACCINE VIRUS:

Remaining from last month.....  
 Received during the month.....  
 Used during the month.....  
 Remaining for next month.....

8,950 units  
 6,500 units  
 5,908 units  
 9,542 units

15,450 units 15,450 units

# ANTI-DYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF OCTOBER, 1927

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.	Tondo.....	7	9	1	8	8	17
	San Nicolas.....	18	13	627	509	645	522
	Binondo.....	243		217		460	
	Santa Cruz.....	421	837	245	495	666	1,332
No. 2.	Quiapo.....						
	San Miguel.....						
	Sampaloc.....	611	496	1,005	1,075	1,616	1,571
	Port Area.....						
No. 3.	Intramuros.....	282		639		921	
	Ermita.....						
	Malate.....	2	2	2	2	4	4
	Paco.....						
	Pandacan.....	7		3		10	
	Santa Ana.....						
	Total.....	1,591	1,357	2,739	2,089	4,330	3,446

Health districts	Municipal districts	Number of injections made in—												Total number of injections					
		Adults						Children						First		Second		Third	
		First injections		Second injections		Third injections		First injections		Second injections		Third injections							
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1	Tondo.....		1,494		1,087		991	52	886	4	1,039	5	669	52	2,380	4	2,126	5	1,660
	San Nicolas.....		1,371		752		568	17	427	4	227	4	177	17	1,798	4	979	4	745
	Binondo.....		1,372		1,020		780		237		274		190		1,609		1,294		970
	Santa Cruz.....		1,434		963		833	6	469		343		286	6	1,903		1,306		1,119
No. 2	Quiapo.....		346		215		215		110		158		115		456		443		333
	San Miguel.....		172		130		59		99		69		44		271		169		103
	Sampaloc.....		1,723		1,020		976	1	2,597		3,361		4,416	1	4,320		4,381		5,392
	Port Area.....																		
No. 3	Intramuros.....		507		346		263	7	146	8	114	9	96	7	653	8	460	9	359
	Ermita.....		914		783		296		43	1	222		301		957	1	1,005		597
	Malate.....		607		487		434	3	1,670	3	1,409	2	343	3	2,277	3	1,896	2	777
	Paco.....		702		391		302		953	2	131	1	126		1,655	2	522	1	428
	Pandacan.....		408		222		49	48	119	37	78	6	17	48	527	37	300	6	66
	Santa Ana.....																		
Total.....			11,050		7,456		5,766	134	7,756	59	7,425	27	6,780	134	18,806	59	14,881	27	12,546

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

V, in persons never vaccinated before; R, revaccinations.

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1927**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	12,422	2,388	3,660	6,374
Agusan.....	8,043	1,856	3,101	3,086
Albay.....	52,520	10,423	10,704	31,393
Antique.....	14,653	3,792	6,907	3,951
Bataan.....	12,039	4,416	3,804	3,819
Batanes.....	3,225	217	746	2,262
Batangas.....	49,325	14,458	10,670	24,197
Bohol.....	20,594	7,665	4,854	8,075
Bukidnon.....	5,362	1,657	1,467	2,238
Bulacan.....	21,750	7,666	6,932	7,152
Cagayan.....	70,508	13,895	43,011	13,602
Camarines Norte.....	8,031	2,108	1,965	3,958
Camarines Sur.....	26,629	6,618	8,558	11,453
Capiz.....	42,088	9,455	18,938	13,695
Catanduanes.....	15,507	3,356	2,533	9,618
Cavite.....	39,633	5,624	24,773	9,236
Cebu.....	95,500	32,295	13,744	49,461
Cotabato.....	22,889	6,436	7,391	9,062
Davao.....	33,374	15,721	9,585	8,068
Ilocos Norte.....	38,159	6,731	15,129	16,299
Ilocos Sur.....	25,954	6,586	3,474	15,894
Iloilo.....	117,664	30,453	66,925	20,286
Isabela.....	30,661	7,694	14,879	8,088
Laguna.....	74,592	10,797	51,695	12,100
Lanao.....	32,876	11,375	15,555	5,946
La Union.....	25,379	5,266	295	19,818
Leyte.....	108,583	30,419	41,599	36,565
Marinduque.....	61,369	4,988	41,678	14,703
Masbate.....	28,723	4,767	16,738	7,218
Mindoro.....	5,809	1,289	1,495	3,025
Misamis.....	23,087	7,728	2,429	12,930
Mountain Province.....	44,700	12,672	23,921	8,107
Nueva Ecija.....	26,815	10,995	5,145	10,675
Nueva Vizcaya.....	4,333	1,347	659	2,327
Occidental Negros.....	94,100	32,534	40,693	20,813
Oriental Negros.....	31,153	9,961	9,548	11,644
Palawan.....	1,207	253	612	342
Pampanga.....	31,729	8,763	10,701	12,265
Pangasinan.....	52,934	17,599	7,892	27,443
Rizal.....	78,317	14,244	59,859	4,214
Romblon.....	39,266	6,659	22,729	9,878
Samar.....	72,875	12,919	32,386	27,570
Sorsogon.....	26,394	11,316	308	14,770
Sulu.....	80,082	17,997	4,285	7,800
Surigao.....	7,186	3,262	3,154	770
Tarlac.....	24,771	5,433	14,329	5,009
Tayabas.....	31,454	12,718	6,571	12,165
Zambales.....	10,330	3,591	4,568	2,171
Zamboanga.....	9,067	2,627	1,376	5,064
<b>Total.....</b>	<b>1,743,661</b>	<b>463,089</b>	<b>703,970</b>	<b>576,602</b>



**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive
Abra.....	948	523	2,013	1,584	2,224	3,841	5,185	5,948
Agusan.....	306	250	449	258	1,513	1,081	2,268	1,589
Albay.....	4,755	1,453	6,673	1,657	11,236	5,200	22,664	8,310
Antique.....	1,527	414	1,668	1,108	1,522	1,984	4,717	3,506
Bataan.....	2,352	476	3,059	1,261	2,598	1,065	8,009	2,802
Batanes.....	279	96	595	227	960	482	1,834	805
Batangas.....	7,108	1,870	10,238	4,165	10,249	8,226	27,595	14,261
Bohol.....	2,908	800	3,656	1,435	4,940	3,758	11,504	5,938
Bukidnon.....	113	120	366	470	1,190	2,145	1,669	2,735
Bulacan.....	6,340	1,137	4,612	1,865	4,252	2,656	15,204	5,658
Cagayan.....	4,891	861	8,139	1,841	17,392	17,069	30,482	19,771
Camarines Norte.....	1,466	300	2,003	479	2,188	760	5,657	1,539
Camarines Sur.....	4,137	1,370	3,898	1,378	8,547	4,351	16,582	7,099
Capiz.....	3,274	697	4,604	2,025	13,791	6,620	21,669	9,842
Catanduanes.....	1,144	677	1,285	780	1,835	1,232	4,264	2,683
Cavite.....	4,599	716	4,195	1,537	10,824	8,821	19,618	11,074
Cebu.....	9,538	3,108	11,173	3,817	11,088	11,057	31,793	17,982
Cotabato.....	593	465	1,555	1,553	5,089	4,769	7,237	6,787
Davao.....	933	336	2,861	1,078	13,038	5,611	16,892	7,025
Ilocos Norte.....	4,081	1,273	6,368	2,274	9,732	9,064	20,181	12,611
Ilocos Sur.....	3,069	998	4,558	1,855	4,768	4,839	12,395	7,692
Iloilo.....	7,233	1,109	15,007	4,176	34,025	28,211	56,265	33,496
Isabela.....	1,853	822	4,035	1,192	9,184	6,993	15,072	9,037
Laguna.....	3,353	872	6,125	2,689	17,545	18,211	27,623	21,772
Lanao.....	556	122	2,488	631	8,670	4,429	11,714	5,182
La Union.....	3,204	910	3,906	3,045	3,402	5,168	10,512	9,123
Leyte.....	4,476	1,285	14,541	3,760	34,153	13,992	53,170	19,037
Marinduque.....	1,908	392	3,306	1,266	22,058	10,307	27,272	11,965
Masbate.....	934	293	2,365	649	8,144	4,692	11,443	5,634
Mindoro.....	740	295	537	306	1,525	1,065	2,802	1,666
Misamis.....	1,411	572	2,140	1,143	3,795	2,543	7,346	4,258
Mountain Province.....	1,443	289	4,271	1,055	15,854	9,467	21,568	10,811
Nueva Ecija.....	4,472	1,546	6,380	2,503	4,331	4,003	15,183	8,052
Nueva Vizcaya.....	629	289	562	517	781	1,308	1,972	2,114
Occidental Negros.....	7,252	1,331	11,829	3,233	18,911	16,801	37,992	21,865
Oriental Negros.....	4,035	1,205	4,434	2,100	8,195	4,533	16,664	7,838
Palawan.....	38	15	117	92	288	337	443	414
Pampanga.....	3,299	879	2,655	996	4,894	4,874	10,848	6,749
Pangasinan.....	9,261	2,393	10,433	3,753	9,739	9,268	29,433	15,414
Rizal.....	5,081	1,601	6,364	2,739	15,934	23,909	27,379	28,249
Romblon.....	1,388	207	4,633	1,358	14,243	10,444	20,270	12,009
Samar.....	2,963	1,017	7,139	3,722	20,217	11,689	30,313	16,428
Sorsogon.....	2,237	911	4,841	2,208	7,403	3,905	14,481	7,024
Sulu.....	1,620	518	5,160	1,483	9,199	3,626	15,979	5,627
Surigao.....	882	337	1,217	461	1,796	967	3,895	1,765
Tarlac.....	2,301	949	3,630	2,169	4,508	7,398	10,439	10,516
Tayabas.....	4,547	808	6,353	1,408	10,970	5,465	21,870	7,681
Zambales.....	2,042	544	1,945	1,062	1,799	2,832	5,786	4,438
Zamboanga.....	484	586	881	1,237	1,195	2,119	2,560	8,942
<b>Total.....</b>	<b>144,063</b>	<b>40,037</b>	<b>221,922</b>	<b>83,600</b>	<b>431,740</b>	<b>323,157</b>	<b>797,725</b>	<b>446,794</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

NOTE.—Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATION WITH ANTI-DYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Total
Agusan.....	361	134	495
Albay.....	329	185	514
Antique.....	361	188	549
Bataan.....	558	486	1,044
Batangas.....	228	132	360
Bukidnon.....	189	147	336
Bulacan.....	809	409	1,218
Cagayan.....	31	21	52
Camarines Sur.....	30	22	52
Ilocos Sur.....	73	29	102
Laguna.....	3,004	1,845	4,849
La Union.....	1,478	746	2,224
Masbate.....	1,204	410	1,614
Pampanga.....	856	158	1,014
Rizal.....	1,593	895	2,488
Romblon.....	90	9	99
Surigao.....	143	93	236
Tarlac.....	423	172	595
Tayabas.....	1,936	958	2,894
Total.....	13,696	7,039	20,735

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-CHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	24,701	8,766	143	33,610
Antique.....	16,074	8,093		24,167
Bataan.....	1,948			1,948
Batangas.....	20,985	40		21,025
Bulacan.....	176,814	3,749		180,563
Camarines Norte.....	1,841	10		1,851
Camarines Sur.....	24,780	974		25,754
Capiz.....	13,516	5,873		19,389
Catanduanes.....	895	368		1,263
Cavite.....	336			336
Cebu.....	57			57
Ilocos Norte.....	14,644	6,717		21,361
Ilocos Sur.....	47	32		79
Iloilo.....	20,970	4,388		25,358
Isabela.....	570	253		823
Laguna.....	6,489	1,080		7,569
Lanso.....	966	674		1,640
Leyte.....	39,067	8,204		47,271
Marinduque.....	502	280		782
Masbate.....	223	108		331
Mindoro.....	402			402
Nueva Ecija.....	148	57		205
Pampanga.....	48,346	6,183		54,529
Pangasinan.....	9,340	5,240		14,580
Rizal.....	58,027	13,367		71,394
Romblon.....	4,776	164		4,940
Samar.....	1,678	473		2,151
Sorsogon.....	6,247	908		7,155
Tarlac.....	6,625	1,150		7,775
Total.....	501,014	77,151	143	578,308

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927 <sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	383	329	175	887
Batangas.....	4,643	2,742	335	7,720
Bulacan.....	2,663	1,800	1,363	5,826
Bukidnon.....	123			123
Camarines Sur.....	223	19		242
Catanduanes.....	7	6		13
City of Baguio.....	17	17	17	51
Iloilo.....	1,979	933	357	3,269
Laguna.....	6,203	3,842	1,587	11,632
La Union.....	267	242	244	753
Mountain Province.....	117	111	111	339
Nueva Ecija.....	741	523	287	1,551
Pampanga.....	2,710	1,739	834	5,283
Pangasinan.....	2,341	1,886	1,268	5,495
Rizal.....	1,811	672	92	2,575
Romblon.....	127	39		166
Samar.....	522	23		545
Sorsogon.....	115			115
Tarlac.....	813	287	20	1,120
Total.....	25,805	15,210	6,690	47,705

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	9,945	2,821		12,766
Bataan.....	3,406	1,983		5,389
Batanes.....	1,504	1,303	710	3,517
Batangas.....	3,877	2,332		6,209
Bohol.....	3,999	3,249		7,248
Bukidnon.....	62	54		116
Bulacan.....	1,330	600		1,930
Cagayan.....	8,217	3,322		11,539
Camarines Norte.....	2,880	380		3,860
Camarines Sur.....	3,724	1,713		5,437
Cavite.....	60,850	59,397		120,247
Cebu.....	61,124	54,896		116,020
Cotabato.....	839	9		848
Davao.....	4,089	2,391		6,430
Ilocos Norte.....	2,096	1,126		3,222
Ilocos Sur.....	3,685	3,204		6,889
Iloilo.....	11,724	6,055		17,779
Isabela.....	63	56		119
Laguna.....	628	144		772
Lanao.....	5,994	2,639		8,633
La Union.....	4,570	3,891		8,461
Leyte.....	15,133	3,966		19,099
Marinduque.....	2,415	827		3,242
Masbate.....	1,694	745		2,439
Mindoro.....	819	22		841
Misamis.....	10,599	3,190		13,789
Mountain Province.....	372			372
Nueva Ecija.....	13,650	6,194		19,844
Nueva Vizcaya.....	4,468	3,765		8,233
Occidental Negros.....	66,089	35,433		101,522
Oriental Negros.....	4,316	2,951		7,267
Palawan.....	216	135		851
Pampanga.....	46,616	21,926		68,542
Pangasinan.....	4,813	3,042		7,855
Rizal.....	33,357	17,833		51,190
Romblon.....	96	17		113
Samar.....	5,491	2,749	173	8,413
Surigao.....	1,570	1,021		2,591
Tarlac.....	5,258	1,252		6,510
Tayabas.....	23,468	10,846		34,314
Zambales.....	8,014	7,490		15,504
Zamboanga.....	6,933	1,476		8,409
Total.....	449,943	277,045	883	727,871

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF OCTOBER, 1927**

(No case and no death reported during the month)

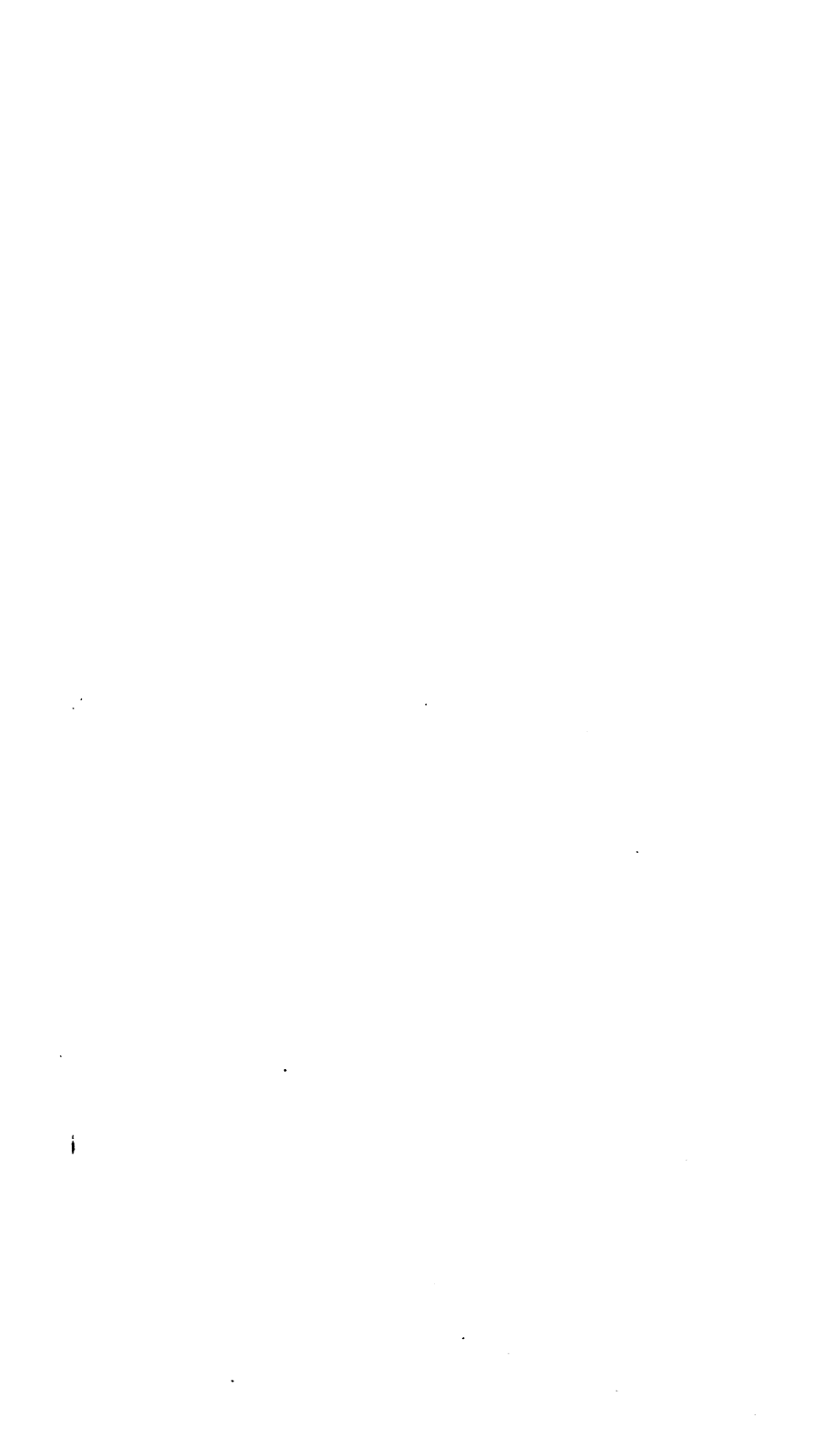
**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF OCTOBER, 1927**

Province and town	Case	Death
Leyte:		
Babatngon.....	4	1
Total.....	4	1

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF OCTOBER, 1927**

Sanitary orders	Health districts—			
	No. 1 Meisic	No. 2 Sam- paloc	No. 3 Paco	Total
<b>Orders pending, October 1, 1927:</b>				
Minor.....	144	185	83	362
Sewer.....	26	51		77
Vacating.....	8	11		19
Filling.....	19	36	21	76
<b>Total.....</b>	<b>197</b>	<b>233</b>	<b>104</b>	<b>534</b>
<b>Orders issued during the month:</b>				
Minor.....	8	12	2	22
Sewer.....	1	1		2
Vacating.....				
Filling.....	4		3	7
<b>Total.....</b>	<b>13</b>	<b>13</b>	<b>5</b>	<b>31</b>
<b>Orders completed during the month:</b>				
Minor.....	5	8	2	15
Sewer.....				
Vacating.....				
Filling.....			2	2
<b>Total.....</b>	<b>5</b>	<b>8</b>	<b>4</b>	<b>17</b>
<b>Orders cancelled during the month:</b>				
Minor.....				
Sewer.....				
Vacating.....				
Filling.....				
<b>Total.....</b>				
<b>Orders pending October 31, 1927:</b>				
Minor.....	147	189	84	370
Sewer.....	27	52		79
Vacating.....	8	11		19
Filling.....	23	36	21	80
<b>Total.....</b>	<b>205</b>	<b>238</b>	<b>105</b>	<b>548</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	29	52	30	111
<b>Permits for minor building constructions:</b>				
Approved.....	34	44	30	108
Disapproved.....	5	4	2	11
<b>New buildings completed.....</b>	<b>19</b>	<b>28</b>	<b>25</b>	<b>72</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	5	20	11	36
Disapproved.....		7	2	9
<b>Prosecutions:</b>				
Convictions.....				
Dismissals.....				
Amount of fines.....				
<b>Plumbing permits issued.....</b>	<b>41</b>	<b>64</b>	<b>45</b>	<b>150</b>
<b>Plumbing projects completed.....</b>	<b>55</b>	<b>87</b>	<b>59</b>	<b>201</b>
<b>Premises connected to the sanitary sewer to Sept. 31, 1927:</b>				
Connected during the month.....	2,526	4,336	735	7,597
	4	9	7	20
<b>Total.....</b>	<b>2,530</b>	<b>4,345</b>	<b>742</b>	<b>7,617</b>

Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

NOVEMBER, 1927

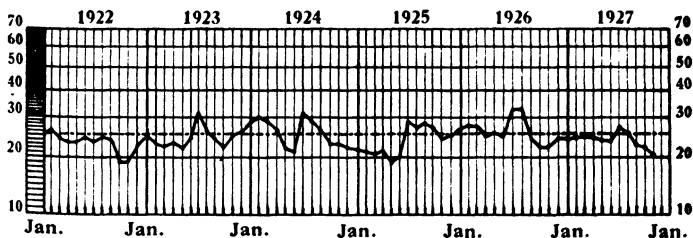
No. 11

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand to mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
The Manila Slums, by Dean JORGE BOCOBO.....	617
Remarks on Form No. 70 of the Philippine Health Service, by Dr. JOSE GUIDOTE .....	619
On Yaws ( <i>Framboesia</i> ), by Dr. PERFECTO GUTIERREZ.....	628
Anti-Cholera Vaccination as an Important Factor for the Control of Cholera Epidemic, by Dr. F. ARENAS.....	640
Miscellaneous .....	649
General Statistics .....	655



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VII**

**NOVEMBER, 1927**

**No. 11**

**THE MANILA SLUMS**

By **JORGE BOCOBO**

*Acting President of the University of the Philippines*

The living conditions of the poor in Manila, as I saw them during the visit made by University students last Saturday, are a disgrace to any civilized community. Scores of thousands of poor people in the city are crowded in hovels and ground floors of building with very little ventilation. Many nipa shacks are on lowlands with mud and filth.

Why had this shocking state of affairs been allowed to continue in a city like ours, which boasts of being progressive and modern? There are several causes, some of which are the following:

First, the political aspirations of most of the elective councilors. It is an established fact that whenever the health service wants to enforce the health ordinances, these councilors espouse the side of the people affected, and a strong opposition is thereby developed. The councilors know full well that it is for the good of the people themselves that health measures should be taken, and yet for the purpose of reelection, such an obstructionist attitude is taken. This is not only true with councilors in office, but also with the candidates for the position. These men who have an influence on the masses, ought to guide them towards hygienic living and thus help, and not hamper, the work of the public health service.

Another cause of the present conditions is the indifference of the intelligent and educated classes in the city. Why is there

not a more militant and symphathetic attitude on the part of our educated countrymen? We need such a stand as was taken by Theodore Roosevelt, who, years ago, did so much for the amelioration of the east side of New York.

Small wages constitute the third cause. If the laborers in the city obtained fair salaries, there is no question that they could improve their situation. Employers should consider this question seriously, bearing in mind that health, their workers are more efficient. Moreover, when there is sickness in his family, the laborer is worried, and he cannot work so well.

Another reason is the ignorance of the mass. They need educational lectures on hygiene. If half of the electioneering speeches made by the candidates were on health matters, much improvement could be effected. If the vernacular press carried more educational articles on hygiene, there would be some progress in health work.

May the above observations appeal to some thoughtful citizens of Manila. The poor we shall always have with us, it is true, but let us make the lot more bearable. See upon our vaunted culture when we have such misery and want in our midst!

## REMARKS ON FORM NO. 70 OF THE PHILIPPINE HEALTH SERVICE

By Dr. JOSE GUIDOTE  
*Chief, Office of Vital Statistics*

Vital statistics is so important that it needs much attention. To many it may seem an uninteresting subject because they have failed to appreciate its hidden beauties. A health officer who is interested in his work should cultivate interest in statistics because it is only the shortest method whereby the end of his effort could be visualized. Statistics is the true narration, in terms of numbers and figures, of his effort as a health officer. It measures what a health officer has done for the health of his people. It acts as the health barometer of a nation, foretelling the near approach of epidemics so that proper and timely action could be taken to control the health condition of a country.

It is so important, I repeat, that its preparation should be treated with great care. It should be the test of the efficiency and capacity for initiative and responsibility of a public health official. During my yet short period of administration in the Office of Vital Statistics, I have already observed common faults in rendering reports. Those faults are the delay in their submission or nonsubmission at all, and the errors in their preparation. The Office of Vital Statistics, realizing the importance of those reports, could not blindly let mistakes pass away without calling the attention of the health officer concerned and ask for their corrections. It is lamentable to note that the delay in the compilation of the reports in the Office of Vital Statistics is due to the need of a very careful revision of all reports, thus the asking for their corrections becomes imperative, which at times has to be made three or four times before they could be properly accomplished. Those mistakes are either due to the negligence and carelessness of the health officers or to their insufficient information on the subject. I am more inclined to believe in the former as it would be tantamount to annoying my colleagues to believe otherwise. I trust in their ability to render accurate, timely, and well-prepared reports, although

my observation fails to justify my belief. The mistakes found in Provincial Form No. 70 may be classified under two headings. The first group may be classified as mistakes due to carelessness and negligence and the latter, mistakes due to lack of sufficient information. The first group are mistakes in addition, in copying, and failure to comply with the instructions, the second, mistakes in classification.

I will here analyze in detail, those mistakes. To begin with, let me refer to you page 17 of Provincial Form No. 70. The common mistakes on this page are the following: Oftentimes the total of legitimate plus illegitimate births, by sexes, do not agree with the number of birth, likewise by sexes. Numbers are incorrectly added and sometimes stillbirths are included in the total births while the instruction on clearly states otherwise. The deaths among transients are sometimes included in the permanents and vice versa. Japanese are classified under Europeans and similar other mistakes are committed. Rates are usually erroneous because of the failure to use the proper formula for the month. Sometimes for formula for a month with 30 days is used for the month with 31 days.

On the table of deaths by causes, pages 18 to 31, mistakes are usually due to improper classification, mistakes in addition, failure to comply with the instructions, and errors in bringing sub-totals forward. Deaths are often classified under those causes not recognized in the Philippines. The following extract from service circular No. 58 are some of those causes not recognized in these Islands.

(2) *Typhus fever*.—It is an acute infectious disease possibly caused by a pleomorphic gram positive bacillus, *B. typhi exanthematici*. It is transmitted by lice. It is known in Europe and America.

(3) *Relapsing fever*.—There are two: European and Tropical relapsing fever. It appears epidemically and caused by spirillum obermeieri. It is transmitted by tick bites. Relapsing fever has many points in common with influenza and may be confused with it.

(4) *Malta fever*.—It is a septicemic condition due to the presence of the specific organism, micrococcus melitensis in the blood and various organs, especially spleen. The focus of the disease is usually in Malta and Mediterranean shores.

(8) *Scarlatina*.—Statistical reports from various parts of the Tropics failed to show cases of scarlet fever.

(18) *Yellow fever*.—It is an epidemic disease of the west coast of Africa and tropical America, caused by the filterable virus. It is transmitted by *stegomya calopus* (yellow fever mosquito). Yellow fever is apt to be confused with malaria and dengue.

(19) *Spirochetal hemorrhagic jaundice*.—It is an epidemic disease due to a blood parasite called *spirocheta iceterohemorrhagica*. It is also known by the name of Weil's disease.

(190) *Wounds of war*.—At present such is not recognized here. A mere fight between individuals do not constitute a war. It should be avoided meanwhile that no such war exists here.

(193) *Excessive cold*.—It is not known in tropical countries. Sometimes diagnosis No. 29 (a), tetanus umbilical, includes over one year when uniliculus are generally healed within three months. Cancer, diagnosis Nos. 43 to 49, oftentimes includes infants, while cancer pertains to adults, generally 30 years and over. Diagnosis Nos. 46, cancer and other malignant tumors of the female genital organs, and 47, cancer and other malignant tumors of the breast should be limited to females, never to include males as what many reports are having. The common mistake is usually with diagnosis No. 47, cancer of the breast. Breast in this jurisdiction should be understood as referring to female breast. In diagnosis No. 50, benign tumors and tumors not returned as malignant, (tumors of the female genital organs excepted), tumors of the female genital organs can be properly included in any of diagnosis Nos. 137, cysts and other benign tumors of the ovary, 139, benign tumors of the uterus, and 141, other diseases of the female genital organs.

I have observed a common mistake, probably due to misunderstanding, in classifying deaths of beriberi, between infants and adults. Those terms are really misleading, but to settle any doubt in this connection, a foot note on infants which reads, "includes only deaths among infants under 1 year," has been placed on page 21. All deaths from beriberi, one year and over, should be included under adults altho the deceased may not have been a fullgrown person as the common understanding for the term "adult." Rickets are diseases of person under fifteen years and alcoholism, of persons over 15 years of age. Any deaths from those causes beyond those ages should be investigated for proper classification.

Convulsions, diagnosis Nos. 79 and 80, are very popular, particularly in the provinces. In classifying deaths under this

cause, it should be borne in mind that convulsion is only a symptom of many diseases such as beriberi, intestinal disorders, etc. This indefinite term must be strictly restricted to those cases in which the true cause of the symptom can not be ascertained.

Instructions on diagnosis Nos. 99 (c) and (d), bronchitis, unspecified (under 5 years of age), unspecified (5 years and over), 113, diarrhea and enteritis (under 2 years of age), 114, diarrhea and enteritis (2 years and over) and other similar instructions are not followed. Reports from the provinces usually include deaths from those causes other than those ages specified. This is the most typical mistake due to carelessness and failure to comply with the instructions. There is no reason why diagnosis No. 113, diarrhea and enteritis (under 2 years of age), for example, should include over two years when the instruction is very clear that it should include only under two years of age.

Diagnosis No. 135, diseases of the prostate and No. 136, nonvenereal diseases of the male genital organs, are self-explanatory, but still many district health officers are including females in those causes. And then males are sometimes included in diagnosis Nos. 137, cysts and other benign tumors of the ovary, 138, salpingitis and pelvic abscess (female), 139, benign tumors of the uterus, 140, nonpuerperal uterine hemorrhage, 141, other diseases of the female genital organs, and 142, nonpuerperal diseases of the breast. Breast has been explained. Uterus and ovary are all female organs.

Not infrequently do I observe deaths of infants in Group VIII, "The Puerperal State." Such errors are specially common on diagnosis No. 143, accidents of pregnancy, 145, other accidents of labor, and 149, following childbirths. The one concerned may probably think that because a child dies due to an accident in the pregnancy of the mother, or to some accidents in labor, or when it dies immediately after birth, it can be included in any of those causes, but it is a wrong interpretation of the cause of death. Such death may be properly included in any of the causes on Group XII, "Early Infancy." All of those causes in Group VIII, "The Puerperal State," should include only females of child-bearing age, approximately 13 to 49 years.

All deaths on "Early Infancy" should not include deaths other than of those ages specified in the footnote of page 29, which is under one year for congenital debility, icterus and sclerema, and for premature birth, and under three months for

injury at birth and lack of care. Notwithstanding those instructions, many reports received in the Office of Vital Statistics include deaths, one year and over, from those causes.

Senility, diagnosis No. 164, is very popular in the provinces. Notwithstanding the instruction on the bottom of page 29 which reads, "includes only deaths of 70 years and over," many reports that are received from the provinces include under 70 years. This diagnosis should never be used to deaths under 70 years and even to over 70 years who succumbed to a definite disease. The disease causing the death should always be stated and the death should be classified under that cause. It should only be used when the death could not be assigned to any other cause.

Many errors are also committed in classifying deaths from suicide. Reports from many of the provinces include suicides of infants, sometimes as young as under 1 year. In suicide (killing one's self intentionally), ability to entertain criminal intent is the essential element. A child of such tender age as five or six years, for example, can not conceive the idea of killing himself. Even our jurisprudence does not recognize the criminal liability of infants of such tender age. For our purpose, suicides should not include under 10 years. Those below that age may be classified as homicide, infanticide, or any other accidental causes, as the case may be.

Too often do I observe deaths on diagnosis No. 188 (b), street-car accidents, when I know of no such street-car in any province. Street-car as here used means electric street-car like those we have in Manila.

In classifying deaths, homicide of infants under 1 year and infanticide are apt to be confused. Infanticide is the killing of a newly born child, caused generally by the mother, grandfather or father or other relatives of the mother for the purpose of concealing her dishonor. It may also be committed by any other person under the same circumstances. The killing of infants without such motive of concealing the dishonor of the mother does not constitute an infanticide but a homicide. Infanticide as contemplated in our law should not be confused with infanticide herein treated. Under our law, in order to constitute a crime of infanticide, the newly born child must not be more than 72 hours, while for our purpose, it may be more than 72 hours so long as it is under one year.

More mistakes are committed on "Infant Mortality," page 32 of Provincial Form No. 70, than elsewhere. In the first place, errors in printing should be noted. "Tetanus umbilical" should

be read "tetanus" alone and "other infectious diseases (1-41)" should be "other infectious diseases (1-42)." The mistakes are oftentimes committed here merely due to the failure to compare the deaths from those causes specified with the deaths under one year from the same causes on pages 18 to 31 of the report. "All causes" are not usually filled out and oftentimes the grand total do not agree with the total deaths under one year on page 31.

Mistakes are also often committed on page 33, deaths among transients. Sometimes the number of transients on this page do not agree with the number of transients on page 17. Residence of the deceased transient is sometimes in the province or town where the death took place, while it should be his last residence, his residence before he entered the town, or province, where he dies. Oftentimes a resident of a town in the province who died while temporarily residing in another town within the same province is classified as transient. It is true that he may be a transient in the locality where death overtook him, but he does not thereby lose his status of being a permanent resident of the province.

Many errors are also committed on page 34, deaths among Americans and foreigners. Sometimes there are foreigners on page 17 while there is none on this page and vice versa. Sometimes the nationality stated on that page is not the same as the nationality stated on page 17.

Deaths by age and social condition sometimes include transients when the instruction to the contrary is very clear. Deaths by age groups do not agree with the deaths from the same age groups on page 31 altho the transients on page 33 are added to them.

The number of deaths with plus without medical attendance sometimes excludes transients when they should be included.

The table of marriages by age and nationality are often very erroneous. Males sometimes do not agree with the females.

Many mistakes are also committed on page 37 of the report. The number of births, death, and marriages, by towns, do not agree with the number of births, deaths, and marriages on other pages.

So much for the common faults in the statistical report on Provincial Form No. 70. There are other serious faults of health officers in other reports, particularly in the report of death. The death certificates are often incompletely prepared.



The names and other data are hardly legible and oftentimes omitted. Reports from these Islands show just a very negligible proportion of the deaths with medical attendance. I know it is not the actual fact for there are many instances when certain deaths with medical attendance are reported to have none. This is one of the greatest drawback to the compilation of the complete and accurate data of the causes of deaths. Every physician, particularly those in the service, should cooperate together to do away with this existing drawback for the welfare of our profession and of humanity.

Copies of the death certificates of only a very small proportion of the deaths among Americans and foreigners are forwarded to the central office as required in the instruction on the back of the certificate. Sometimes certificates of Americans and foreigners are received in the office of vital statistics, but they are not reported in the monthly health report and vice versa, and in numerous cases, they do not agree in many respects.

Some health officers are arrogating into themselves powers which do not properly belong to them. Many of them are issuing permits for the transit of cadavers from one locality to another, depriving the rightful authority of that power and going against the law.

There are numerous other errors and faults which are here too voluminous and tiresome to enumerate. Many of them, in fact almost all, could be avoided if we should only follow all the service circulars and memorandums.

Graphical representation constitutes one of the most important means of presenting statistical data, and one of the most useful helps in reasoning about them.

I doubt how many of our district health officers have enjoyed the benefit to be derived from statistics, how many of them have noticed increases or decreases in their mortality statistics and has examined the causes for such divergencies to that proper precaution and ready remedies may be had for the future. I wonder if any of them has compared reports from different periods, different ages, sexes, social conditions, occupations, etc., and has noted differences to indicate progress or retrogress in his work. This is one of the important cause for the failure of our statistics to render its valuable aid to health officers. This comparison, so essential for the successful working of any health officer, can be best facilitated with the aid of graph-

ical representation which renders easily comprehensible large and complex arrays of figures. The most useful of this graph is the rectangular, with a horizontal base-line, the abscissa, and a vertical line perpendicular to it, the ordinate, meeting at a common point, zero; the base-line representing different periods, ages, etc., while the ordinate, the numbers of deaths, births, or marriages. But it must be borne in mind that in graphical representation, exaggerating or minimizing the scale on which the incidence of a disease is shown easily, produce an erroneous impression so that they should be guarded. Statistical as well as graphical fallacies should be avoided. The first consists of errors in plotting, specially marked in small-scaled graphs, the second, deception due to optical conditions. Our eyes are apt to be deceived so that differences must be carefully measured.

*Maps.*—Maps are used in two ways: (a) Maps showing by shading or colouring the varying geographical incidence of the phenomenon in question.

(b) Spot maps are useful in keeping track of the course of an epidemic. A large map of the district should be kept in the district health officer's office, or Provincial Sanitary Division and each day the street in which a new case or cases of infectious diseases occur is noted by an appropriated coloured flag or pin. This is very valuable for diseases like typhoid fever, cholera, smallpox, etc.

A joint Committee of the American Statistical Association, of the American Society of Mechanical Engineers, and of a number of other Societies and official organizations in preliminary report have made the following, among other recommendations, as to diagrams (Journal of the American Statistical Association, December, 1915):

1. The general arrangement of a diagram should proceed from left to right.

2. Where possible, it should represent quantities by linear magnitudes. as areas or volumes are more likely to be misinterpreted.

3. For a curve the vertical scale, whenever practicable, should be so selected that the zero line will appear on the diagram.

4. If the zero line of the diagram will not normally appear on the curve diagram, the zero line should be shown by the use of a horizontal break in the diagram.

5. The zero lines of the scales for a curve should be sharply distinguished from the other coördinate lines.

6. For curves having a scale representing percentages, it is usually desirable to emphasize in some distinctive way the 100 per cent line or other line used as a basis of comparison.

\* \* \* \* \*

8. When curves are drawn on logarithmic coördinates, the limiting lines of the diagram should each be some power of 10 on the logarithmic scales.

9. It is advisable not to show any more coördinate lines than necessary to guide the eye in reading the diagram.

10. The curve lines of a diagram should be sharply distinguished from the ruling.

11. In curves representing a series of observations, it is advisable, whenever possible, to indicate clearly on the diagram all the points representing the separate observation.

\* \* \* \* \*

14. and 15. It is often desirable to include in the diagram the numerical data represented, . . . or, if this is not done, to give the data in tabular form accompanying the diagram.

I will now end my Remarks with the hope that we will work together as a single body for the common good—the health of the nation. The strength and invincibility of our aim depends upon our united effort.

## ON YAWS (FRAMBOESIA)<sup>1</sup>

By Dr. PERPETUO GUTIERREZ,

*Assistant Surgeon, Philippine Health Service*

Synonyms: *Gubas* (Pampango) ; *Bubas*, *Galis Pateros*, *Kati* (Tagalog) ; *Bubas* (Ilocano) and *Buti* (Bicol and Bisaya-Samareño).

Definition: Yaws is a chronic, contagious, tropical, specific disease, caused by the *treponema pertenue*, and is characterized by a polymorphous eruption.

*Prevalence and transmission of the disease.*—The disease is found in nearly every part of the Archipelago, although it is more common in some parts than others. Our statistics for the past five years, show that the disease is most prevalent in the Batanes Group, the Ilocos Provinces, Pangasinan, Zambales, Rizal, the Bicol Provinces, Cotabato, Sulu, and Davao.

These provinces, however, represent only those that have yaws clinics. Circulars have been sent to different district health officers requesting them to report the prevalence of the disease in their districts, and following the reports of its occurrence, clinics have been established. A few of the provinces, however, reporting the non-existence of the disease in their districts, later found that it does exist, and it is possible that the disease is more generalized than what these reports would indicate.

The disease is solely tropical, as few, if any, genuine cases have been reported in temperate climates these past several years. It is said to prevail more in warm than in cold climates, as in the hills where the altitude reaches 800 feet or over. This assertion has been shown incorrect by Ramsay, Howard, Sellards, and Winckle, who report cases of yaws in altitudes as high as 3,000 to 4,000 feet.

The disease is more prevalent among the poorer elements of

---

<sup>1</sup> Read before the health officers, First General Assembly, Baguio, on May 8, 1926.

the population rather than the rich; this is probably because the rich pay more attention to minor wounds or open abrasions that are likely to be infected with the virus of yaws. In our yaws clinic at Parañaque very few of the well-to-do were infected.

*Age and sex.*—No age is exempt but the disease is more prevalent among children and adolescents as shown in Table 1.

TABLE 1.—*To show age incidence of the disease*

Age	1 to 12 months	13 months to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	21 to 25 years
Number of cases.....	9	78	84	48	7	31
Percentages.....	3.89	30.34	48.4	18.67	2.72	12.06

*Mode of transmission.*—The disease is probably transmitted by direct contact, from person to person. A more or less intimate contact seems necessary for the transmission of the disease, such as different members of family, or playmates. A wound, an abrasion, or solution in the continuity of the skin, seem necessary for the virus to enter the tissues. It can not, for example, enter in a sound skin. In most of our cases a history of scabies is obtained, which is a general affection among the poor in the Philippines; and who, unfortunately, do not want it treated till some weeks or months have passed, for fear that a more serious disease than scabbies may supervene.

Flies have been thought to be mechanical carriers of the treponema since 1796, when Stedman described a fly transmitting the disease. It is even thought by writers of the West Indies that a special fly transmits the disease. It is, however, now known that the common house fly may carry the treponema to an abraded skin. Thus, Castellani caught some flies that have been fed on yaws nodules. He then allowed them to feed on the eyebrows of monkeys whose skins have been previously scarrified. In one of the experiments, 5 monkeys were thus treated and 1 developed yaws. In the second experiment, 7 monkeys were used and 2 developed the disease.

Flies are abundant everywhere in the Philippines and are specially abundant at certain seasons of the year. It is not an unusual sight to see half a dozen or more of them feed on wounds of poor people. The flies then are driven off by the "penitent" and go to feed on another sore, from a yaws granuloma to a

clean wound, which later is almost sure to become a primary yaw lesion.

#### COURSE OF THE DISEASE

The course of the disease has been divided into three stages, the primary, secondary, and tertiary stages. The primary lesion appears at the site of the inoculation in from 12 days to 3 months after exposure. There are no clear systematic symptoms at this stage, although slight malaise and pain in the bones may appear from time to time. After a period, varying from 3 weeks to 3 months from the time the primary lesions appeared, the secondary lesions make their appearance. These are preceded by malaise, fever, pain in the bones and muscles. This stage may or may not be followed by a period of quiescence, when the tertiary lesions may make their appearance. As a general rule, however, the tertiary lesions appear from 5 to 20 years after the secondaries have disappeared. Harper and a few other investigators claim that there is a quarternary stage or that which corresponds to the general paralysis of the insane and tabes dorsales of syphilis; but this view has not found general acceptance.

*Incubation.*—The incubation period varies from 12 days to 3 months. The differences in the incubation period recorded by different authors, is probably due to the fact that not every wound need be infected with the virus of yaws at the time they are made. In actual practice, the incubation period is stated to be between 3 and 4 weeks by Castellani; by Maxwell, 6 weeks to 4 months; and by McCarthy, 3 weeks to 2 months. Powell made extensive studies regarding the incubation period in 86 cases, and found the incubation period in 1 case one week; 3 weeks in 52; and 4 weeks in 33. The average incubation period, therefore, is 3 weeks.

*Primary stage.*—After an incubation period from 12 days to 3 months, with an average of 3 weeks, the primary lesion appears at the site of inoculation. In some cases, the first lesion reported to have been observed are the generalized eruption, but these are always preceded by a wound which did not have the character of a primary lesion and which healed like other ordinary wounds.

The primary lesion is generally in the lower extremity, because this is the part that is more liable to injury in people going barefooted.

Moss and Bigelow found the primary lesion in the lower extremity in 82.87 per cent of 969 cases as shown in the following tables:

TABLE 2.—*To show location of primary lesion*

Location of primary lesion	Cases	Percentage
Lower extremity.....	803	82.87
Upper extremity.....	80	8.26
Head.....	39	4.02
Trunk.....	37	3.82
Genitals.....	10	1.03

Although the primary lesion is generally located on the lower extremity, it may be found anywhere. It is common about the mamma and waist, in women of the East, from nursing affected infants and from carrying babies astride above the hips.

Two forms of primary lesions may be observed, the fungating and the ulcerative. The fungating primary is the typical primary lesion, where there is no superimposed infection on the lesion. It is verrucoid, somewhat raised from the surface of the skin, and does not differ from the secondary lesions which come later, except perhaps for its size. The nodule is covered by a greenish-yellow secretion which dries on the surface to form the typical yaw crust.

The second type is an ulcer resulting from super-imposition of secondary infections on the typical primary lesion; or as the result of caustics applied to it. At times it differs in no way from the ulcers commonly found in children in the Tropics. In others, there may be a suggestion or tendency to fungate at the borders.

The primary lesion is called by the people the "mother yaw" or "the leader." It may heal before the secondary eruptions appear, but as a general rule, it is still present when the secondary eruptions make their appearance. The typical primary lesion heals without leaving any trace, except perhaps a patch of hyperpigmented skin. When the primary lesion is secondarily infected, however, it may leave a scar which differs in no way from other scars resulting from ulcers.

The *stage of secondary incubation* is the time which elapses between the appearance of the primary and the secondary manifestations. We found this, in our cases, to be from 2 to 3 weeks.

De George and Mouzzels say that it is from 15 to 20 days and Castellani from 1 to 3 months. Towards the end of this period, the patient has malaise, pain in the back, the muscles, joints, and limbs. There may be fever, but this is seldom marked and rarely attains or goes above  $38^{\circ}$  C. It is remittent, being higher in the afternoons than in the mornings. It may be present for a few days, a week, up to a fortnight.

These constitutional symptoms may not be present in every case and, as a general rule are more severe and incapacitating in adults than in children who seldom experience severe pains and continue in their games.

*Secondary manifestations.*—The secondary manifestations may be divided into (1) macular or squamous, (2) papular, (3) frambesiform, (4) lesions in moist surfaces—anal, perianal, axillæ, mammæ, etc., and (5) palmar and plantar lesions.

In a series of 196 cases studied by us at Parañaque, the granulomatous or frambesiform type of eruptions were the commonest lesion encountered as shown in the following table:

TABLE 3.—To show the frequency of the different types of eruptions

Type of eruptions.	Number	Percentage
Frambesiform.....	159	81.12
Papular.....	3	1.54
Macular.....	6	3.06
Combined lesions:		
Frambesiform and papular.....	15	7.65
Macular and papular.....	2	1.02
Frambesiform and macular.....	2	1.02
Frambesiform, macular, and papular.....	6	3.06
Ichthyoid shins.....	3	1.54
Palmar and plantar secondaries.....	11	6.63
Moist papules.....	2	1.02

*Macular or squamous eruptions.*—Two types of eruptions may be found: macular and maculo-papular.

The macular eruptions are exfoliating patches of skins which have a lighter color than the surrounding normal skin. They appear in various parts of the body and limbs, though we have never observed them on the scalp. These patches are very noticeable in dark-skinned races.

The patches are small, usually from the head of a match to a pea, when first seen. They are round in contour but they may be of an irregular shape. In some cases the patches coalesce and involve areas to the size of a fist or larger. The scales are fine, branny, white and are easily detached; so that, when the patient comes for observation no scales are found at the center.

These lesions have to be differentiated from (a) *tinea flava*, (b) maculo-anæsthetic leprosy, and (c) leucoderma.



*Maculo-papular eruptions.*—This type is commoner than the foregoing. It may be found on any portion of the body, although we have not observed it over the palms, soles, or in the hairy regions. It is common over the trunk and extremities. The eruptions are pin-point to pin-head papules, forming patches of about the size of a 10-cent piece. The papules are discretely scattered over this area which is white and exfoliating. The scales are fine and branny. The papules may be the color of the skin (brown) or they may be reddish.

*Differential diagnosis*—*Keratosis pilaris* and *ringworm*.

When the material is plentiful there is no difficulty in demonstrating these lesions. The lesions usually appear early in the course of the disease, but they are not necessarily precursor of later eruptions as claimed by some authors.

*Papular eruptions.*—These eruptions precede the frambesiform type; they may be the precursors of the latter type or they may appear as distinct type of eruptions. They are found in 13.27 per cent of our cases. The lesions are minute, red papules, from a pin head or slightly larger, which soon show a yellowish point or minute yellow crust at their apices. Most of the papules remain the same size for many weeks and finally disappear without leaving any trace. Others, however, develop into the frambesiform type of eruption.

*Granulomatous or frambesiform type.*—These are the commonest and most typical lesions of the disease. As may be seen from the table they are found in 81.12 per cent of the cases. They develop from the preceding by the papules growing bigger or they may be formed by the coalescence of several papules. The granulomata increase in size and attain their maximum growth within 2 weeks. They then remain stationary and finally disappear. On attaining their maximum growth they vary in size from the head of a match to 20-cent pieces, half a dollar or larger, but as a general rule they do not exceed the size of 20-cent pieces.

The lesions are round or oval fungating verrucoid growths in different portions of the body. The smaller tumors are invariably round but the larger tumors vary greatly in size and shape. The surface is raised from 1 to 5 millimeters above the skin. Its surface is verrucoid, aptly compared to that of a raspberry from which the disease takes its name. The surface is soon covered with honey-colored secretion which dries up into lemon-yellow crust. When the crust is taken off, the surface of the granuloma resembles that of a pickled cauliflower. Al-

though this crust is lemon-yellow in typical cases, it may be any shade from yellow to brown, depending upon the amount of admixture of dirt and blood. When the patient is cleanly, the crust may be very thin or absent.

The lesions may appear anywhere. In mild cases they may be few or even solitary, but in severe cases the eruptions are symmetrically distributed "from the crown of the head to the soles of the feet."

The lesions are often extremely itchy and exhale a peculiar odor which is thought to be characteristic of the disease. This odor is probably due to the various saprophytic organisms present in the lesions and in part due to lack of personal cleanliness of the individual.

The average duration of each nodule is from 2 to 4 months, at which time the crust becomes thinner, darker in color, and finally falls off. The tumor diminishes in size and are finally absorbed leaving in their place hyperpigmented areas which may persist for months. As a general rule no scars are left. If, however, the growth is irritated by caustics or there is a superimposed infection, a scar is left, resembling in a general way the scar left by a burn. A single crop of granulomata will in many cases terminate the secondary manifestations, especially in young subjects. In others, particularly in adults, there are successive crops of the eruption with a period of quiescence between each appearance of the tumors. Each attack is being ushered in with slight constitutional disturbances. As many as three such crops have been known to occur and, in some cases, to have extended over a period of 2 years from the commencement of the disease.

*Palmar and plantar lesions.*—These lesions must be distinguished from the hyperkeratosis that comes in later on and which is one of the tertiary manifestations of the disease. Two types of lesions may be observed at this stage, but which in reality are simply two stages of the same eruption. The lesions are formed by granulomata of the same type as are found on the skin, but on account of the thickness of the epidermis, do not develop fully as the granulomata elsewhere. In their place, exfoliation is observed, involving either small or large areas covering the palm of the hand or sole of the foot. The exfoliation continues as soon as there is thickening therefore, the skin does not show marked hyperkeratosis.

The other lesion is simply the palmar or plantar granuloma developing to their full maturity. These fungating growths eventually drop off leaving exfoliating patches in no way different from the foregoing.

*Differential diagnosis.*—Palmar and plantar syphilides, and hyperkeratotic ringworm.

*Lesions on moist surfaces.*—When the granulomata develop on moist surfaces, such as between the folds of the skin of the perieum, around the arms, the external genitalia, under the mammæ in women, in the axillæ and between the toes, the scab and the superficial portion of the granuloma is taken off thus presenting a denuded fungating growth similar to the papulohypertrophic condylomata of syphilis. They may be differentiated from the latter in their tendency to be more hypertrophic and their similarity to pickled cauliflower and the presence of yaws granulomata elsewhere.

*Tertiary lesions.*—Following the secondary eruptions there may be a period of quiescence and in some cases this may last indefinitely marking the end of the disease. In about 30 per cent of the cases, however, tertiary lesions appear. These tertiary manifestations may appear within one year after the secondary lesion, indeed in some cases there is no distinct interval between the secondary eruptions and the florid tertiaries, which makes such classification as primary, secondary, and tertiary, objectionable, but for clearness of description this is necessary. Although in some cases there may be no distinct interval between the appearance of the secondary and tertiary lesions, yet in the majority of the cases there is a distinct period of quiescence, which may vary from 1 to 5 years and in exceptional cases from 10 to 20 years. In the meantime, the patient may suffer no symptoms from the disease and is apparently well.

Like syphilis, the eruptions in the secondary stage of the disease do not in themselves cause destruction of the skin. In yaws, the secondary lesions seem to be specially confined to the epidermis. In the tertiary stage, however, the lesions cause destruction of the skin, subcutaneous tissues and bones.

In Parañaque, of 229 cases that we have studied, 33.62 per cent showed tertiary manifestations of some form or another as shown in Table 4.

TABLE 4.—To show relation between the appearance of primary, secondary, and tertiary lesions.

Type of eruptions.	Number	Percentage
Primary.....	10	4.36
Secondary.....	90	39.30
Tertiary.....	24	10.48
Combined lesions:		
Primary and secondary.....	52	22.79
Secondary and tertiary.....	39	17.03
Primary, secondary, and tertiary.....	29	9.98

Tertiary manifestations are the most important lesions of yaws, because they cause much suffering, disfigurement; and according to some writers even death may be attributed to them. Left untreated the primary and secondary lesions eventually get well, but the tertiary manifestations, although occasionally heal, more often steadily advance and involve large areas; and when they do finally heal, they cause deformities, contractures of joints, and strangulation of the blood supply, followed by elephantoid swelling of the extremity.

*Tertiary lesions of the skin.*—Tertiary manifestations of the skin may be classified into gummata and tubercular or nodular lesions.

Gummata are found in limited numbers in localized portions of the body, although they may be multiple and involve larger areas. They may involve any portion of the external surface of the body, but they are commonly found on the head, trunk, and extremities. The lesions are at first firm, circumscribed, indolent nodules in the corium and subcutaneous tissue. They increase in size until they are as large as an olive or larger, when the center gives way and an ulcer results. The resulting ulcer has in many instances perpendicular edges and uneven base. In some cases, specially when there is mixed infection in ulcers of long standing, undermining of the edges have been observed. Their development is comparatively painless unless they are associated with bone lesions or when there is a superimposed infection. Eventually the ulcer heals leaving a scar thicker than that produced by the serpeginous lesions, often with bands crisscrossing the entire surface. When these scars are around a joint, their contractions later cause deformity and in others fixation and immobility.

*Tubercular or nodular lesions.*—These are more superficial than the gummata and like these they may be found anywhere, although they are more common on the trunk and the extremities, the head and neck. The lesions occur in groups, often in circular

or oval patches. The individual papules vary in size from that of a pin's head to a pea, and are frequently surrounded by an inflammatory halo. The color is dark red. In many instances the nodules break down and produce punched-out ulcers. Frequently, the outline of those patches is irregular, and they show a gradually extending edge, while behind, spontaneous healing takes place.

*Differential diagnosis.*—Tertiary syphilides, both gumma and nodular syphilides.

*Keratoderma palmaris et plantaris sulcatum; castellani.*—This is the commonest tertiary manifestation of the disease. At Catanduanes, 73.89 per cent of the people coming for treatment were suffering from these lesions. Two forms of this keratosis have been encountered. In one there is a gradual thickening of the palm or sole surrounded by hyperpigmentation. The hyperkeratosis, which may be 20 times that of the normal skin, gradually becomes marked, while the lesion enlarges and in this way involve the entire palm or sole. The skin becomes dry and deep fissures may be found around the joints on account of the motion of the fingers or toes.

The other form starts as isolated corn-like hyperkeratosis embedded in a thickened horny layer. This thickening involve the whole palm or sole. The corn-like, hardened, horny layer are about the size of the point of a lead pencil. These are easily detached or fall off spontaneously, leaving small pit-marks scattered over the thickened palm. The condition is painful on pressure, as when the patient walks, the pain being likened by the patients to the sensation produced by walking on the tips of blunt nails. When once present, the condition is progressive and lasts throughout the life of the individual. As the disease progresses, it involves the dorsa of the hands and feet and may involve even the skin of the wrist and skins as far as the elbows and knees. As a final stage of the condition, the skin becomes depigmented and when this condition is reached, the affected skin frequently becomes thinner, approaching its normal texture.

During the rainy season, when the people work in the rice-fields painful, fungating granulomata, having the same character as the secondary granulomata appear in the palms and soles.

*Differential diagnosis.*—Arsentral meratosis; perokeratosis mibelli; syphilitic hyperatosis; hyperkeratosis found in lichen planus; hyperkeratosis found in Darier's disease; hyperkeratosis of Emery, Gaston, and Nicholau (*verrues familiales hereditaires avec dyskeratoses systemateuses*); and liner nevus.

*Gangosa.*—Gangosa is the name given to a destructive condition of the nasopharynx and which has been called by "rhinopharyngitis mutilans." This is a somewhat rare manifestation of the disease. The condition starts in either the soft palate, the pillars, the pharynx, the nose, and nasolabial sulcus. In any of these places the condition starts as a painful shallow ulceration. The ulcer is at first superficial, covered with a thin yellow pellicle of necrotic tissue. In the nose, this condition is accompanied by great swelling of the tissues which obstructs the nasal passages. The pellicle breaks down and leaves an ulceration which enlarges and involves the adjacent tissues rapidly, so that in seven days there is marked destruction of the soft palate. The ulceration progresses and involves the hard palate and nose, leaving the upper lip as a bridge across a gaping cavity which was originally the nose and roof of the mouth. In most of the cases, the condition is arrested at this stage, but in others the skin surrounding the nose and eyes is involved, producing the most hideous deformity. The condition may also be arrested at any stage; we sometimes see patients who have ulcerations of the soft palate without any other lesions.

*Differential diagnosis.*—Syphilis and tuberculosis.

*Nodesites juxta articulaires; Jeanselme.*—Nodesites juxta articulaires is the name given by Jeanselme to subcutaneous tumors found about the elbows, knees, and other joints, in patients who have had yaws. It is true that not all the authorities agree that these tumors are due to yaws, but the majority now believe that they are a late manifestation of this disease. The tumors are found in persons past middle age. They may, however, be observed in younger individuals. The tumors are found around the joints, principally about the ankles, the knees and elbows, but they may be found over the hips and some even report of finding them over the sacrum. The tumors are not found exactly over a joint, but are situated 1 to 2 centimeters from it. When small, the tumors appear as subcutaneous hard masses attached either to the periosteum below or to the skin above. At this stage the skin overlying the tumors may not be raised. As the tumor grows, however, the skin over it is pushed outward and the growth underneath is clearly perceived. The tumors may grow as large as a hen's egg; rarely larger, though Jeanselme reports tumors about the size of a fist. When the tumors have reached this size they are apt to become seemingly adherent to the skin above, but in reality the skin is only stretched over them. Lobulations are felt in these growths early in their existence, as if

several tumors were present in a single capsule. The tumors have no tendency to disappear and may be present throughout the life of the individual affected.

*Differential diagnosis.*—Subcutaneous fibroid syphilomas of Weber.

*Bone lesions.*—These are encountered in two forms. In one, there are localized nodes on the bone and, in the other, there is a diffuse osteitis which involves the whole bone. The bones frequently affected are the tibia, the radius and ulna, the fibula clavicle, the ribs, the sternum and Lays rarely, the calvarium. The nodular form being the commoner of the two, occurs as localized inflammations on the surface of the bone. The nodes are at first localized on the periosteum, but later involve the soft tissues above and then soften and open thru the skin. The periosteal inflammation, which, according to Maul, is a real rarefaction of the bone and a destruction of the periosteum, is very painful when it occurs acutely; but when chronic, it causes only dull aching pains felt deep in the bone. Different portions of the bone may be affected, and these head in time leaving the shaft of the bone irregularly depressed and the skin over it scarred and drawn tightly over the affected bone.

When the whole bone is affected, as in the diffuse type, the whole shaft is thickened, including the periosteum; so that, if the tibia is affected, it is bowed anteriorly, much in the same manner as the bowing found in congenital syphilis.

## ANTI-CHOLERA VACCINATION AS AN IMPORTANT FACTOR FOR THE CONTROL OF CHOLERA EPIDEMIC

By Dr. F. ARENAS

Without claiming originality or pretending to introduce a brand new method, this humble work has for its purpose simply to show the efficiency of anti-cholera vaccination in checking the progress of an epidemic of cholera when the vaccination is done properly and systematically.

Since 1919, during the Balkan War and also in Java and Indo-China, cholera vaccination has already been in use with positive results. In 1920, it has been introduced in the Philippines and proved to be successful.

Two kinds of vaccine have been used by the Philippine Health Service since 1922 for the systematic immunization against cholera. The mixed vaccine containing cholera, typhoid and paratyphoid, and the pure cholera vaccine. The mixed vaccine actually used contains the following combination per 1 cubic centimeter: 2,000,000,000 cholera vibrio; 1,000,000,000 typhoid bacilli; 500,000,000 paratyphoid A. The pure cholera vaccine contains 3,000,000 cholera vibrio per cubic centimeter.

Both vaccines come in 60-cubic-centimeters bottle, prepared by the Bureau of Science in its farm at Alabang.

In order to produce immunity against cholera, the mixed vaccine needs to be given at least twice, 1 cubic centimeter every time, with an interval of one week. This is quite slow if we want a quick control of an epidemic. The pure cholera vaccine, on the other hand, needs to be injected but once. In the absence of cholera epidemic it is highly recommendable to use the mixed vaccine as it confers immunity to both cholera and typhoid at the same time. However, in time of epidemic, the pure vaccine should be used, and the best way in this case is to start the vaccination from the infected place and then around increasing systematically the radius of immunization.

The method used by the United States Army for the immunization against cholera consists in two injections with the pure vaccine, giving 1 cubic centimeter for the first and  $1\frac{1}{2}$  cubic centimeters for the second, with an interval of one week.



The method of campaign we adapted in the last epidemic of cholera in Manila consisted in the following:

1. Vaccination in all the factories, bureaus, and schools.
2. Permanent vaccinating station in the markets, health stations, and cockpits during cockpit-days.
3. Vaccination in stores, hotels, and restaurants.
4. Vaccination in boats, at the port and rivers.
5. Systematic vaccination from house to house.

The vaccinations in factories, bureaus, and schools which correspond to the first group were done by physicians and nurses. In the second groups (permanent station) by two sanitary inspectors and one municipal police. In hotels, restaurants, and stores the managers of the establishments were notified to send their employees to the central office for inoculation. In cockpits one group of two sanitary inspectors and one municipal police were assigned at the entrance, this being the most appropriate place. In the vaccination in boats two groups of sanitary inspectors were detailed. They searched daily all the water ways of the city for new boats arriving from the provinces. In the systematic house-to-house vaccination 30 groups of two persons each were employed; starting their work from the city limits and moving towards the center. Two groups of sanitary inspectors were assigned exclusively for the immediate vaccination of contacts of new cases reported, and two other groups for the vaccination of the block where cases occurred. This latter arrangement has been found necessary in order not to interrupt the work of those engaged in the systematic vaccination throughout the city, and at the same time be able to control early the direct contacts.

The intensive work of vaccination started on September 23, 1925, and five weeks later, with 80 per cent of the population vaccinated, the epidemic could already be considered as controlled. In badly infected places where occasional cases still occurred revaccination was done. An average of 9,000 vaccinations were reported daily.

In cases of refusal for vaccinations names and addresses were taken down and reported to the medical officer in charge, who took up the case and almost succeeded in persuading those persons to have themselves vaccinated. The personnel were given strict orders to avoid any antagonism with the public and to report any incident to the medical officer in charge.

Besides the 30 groups engaged in the work of house to house vaccination, the Red Cross employed an average of 20 groups daily for a period of four weeks. They performed house-to-house vaccination in the districts of Santa Cruz, Ermita, and Quiapo.

#### TECHNIQUE

The field of inoculation is disinfected. with alcohol. The left arm is usually chosen due to its being more handy for the operator and at the same time more convenient for the person injected; as the arm may be more or less hampered from working during the period of reaction. Taking into account that the majority of people are not left-handed, left-handed injection is done as a routine. However any muscular portion of the body would do. Once the field is disinfected and the syringe sterilized and charged with the solution, we proceed to the injection. A good grip of the arm is of prime importance while injecting, specially in children and nervous people, to avoid breakage of the needle.

For campaign work 5 cubic centimeters syringe is best recommended. Ten cubic centimeters syringe, however, would prove more speedy as it will have to be changed with vaccine less frequently. It needs, however, some practice to calculate small doses of less than one cubic centimeter. A larger syringe than 10 cubic centimeters is less accurate and should never be used for children. One or 2 cubic centimeters capacity syringe needs to be charged with vaccine practically every injection and this naturally results in a considerable waste of time. Platinum needle is the best and the only practical one in the house-to-house vaccination. It has the advantage over steel needle for being sterilizable by direct flame.

#### DOSES

Any person above one year of age may be injected, the dose varying according to the following table:

Age	First injection	Second injection
	Cubic centimeters	Cubic centimeters
1-4.....		
5-9.....		
10-14.....		
15 and up.....	1	1½

The second dose should be given when ever there is no security of performing the second injection and in case when a prompt immunity is desired.

There is practically no contra-indication against cholera vaccination except fever and acute diseases. It can be given safely to nervous person, during pregnancy, during menstrual period, and other minor indispositions.

Before using a syringe it should be well examined to be sure that the piston is well adapted and allows no leaking back of the fluid, otherwise the dose supposed to have been given would be less than the real one and may not be sufficient to confer immunity.

An inoculation containing 4,500,000 bacteria produce immunity for a period of one year more or less. Shaking of the bottle of vaccine before using should never be forgotten to make an even distribution of the bacteria suspended in the fluid. This is most important not only in cholera but in any bacterial vaccine.

Experience shows us that in factory of 1,000 laborers and with the injecting personnel composed of two vaccinators and two assistants (for taking data and issuing certificates), going from room to room, the work can be finished in four hours. A more speedy procedure however may be done in the following way: A convenient room or place is chosen provided with a table where the place outfit. One vaccinator is enough, aided by another who makes the disinfection of the arms, and two clerks to make the necessary records. The laborers are instructed to enter one door where the vaccinator is located and leave thru the other door where the names and other data are recorded. In this way 1,000 persons may be finished even in one hour.

In schools and bureaus a similar procedure is recommended. In barrios, to make the work easier, a previous interview should be held with the councilor or "teniente del barrio" to have his coöperation, and to fix the date and location for the vaccination of the inhabitants "en masse." Saturday afternoon and Sunday should be chosen for this purpose. Later on, a house-to-house vaccination may be done to inoculate persons who may have been missed. Vaccination may also be performed on Sundays in front of the churches after mass or in cockpits.

For the prophylactic vaccination of a place, municipality or barrio, the first thing that should be done is to find out the actual population of the place. Accordingly calculate the number of the personnel and the amount of material needed for a rapid and efficient work. Thus no time is wasted in going back and forth after more material. Once the vaccinators have started from the station they should not be back till they are thru with the barrio or place.

It has been common practice with some of the officers to simply give the orders to the vaccinators and receive their reports without taking pains in ascertaining the veracity of such reports and the way the vaccination was performed. This is very important, as only from the veracity of such reports can we depend in ascertaining if a town or province is immune or not.

In order to verify properly the works of vaccination Forms 1, 2, 3, 4, and 5 are recommended.

Form 1 is the record of vaccination by street or barrio, and is recorded in the corresponding municipality. This record serves for many purposes: It shows how many and who were or were not vaccinated in a given street or barrio. It also gives an idea of how much and how long a vaccinator had worked in a particular day. The number of persons recorded will show how many persons were vaccinated. Should the Superior of a vaccinating party want to find out what time the vaccinator started and left his work, all he has to do would be to inquire from the first and last persons in the list the time they were vaccinated. In the last cholera campaign of the city this form aided much in discovering irregularities in the performance of duty of the vaccinators. Going home earlier than the prescribed time; insertion of fake names in the record and other tricks were caught and duly punished.

Form 3 divide the province into sanitary districts and municipalities and should contain the record of population corresponding to each municipality or district.

Form 4 refers to the number of total inhabitants in each province and the number corresponding to 80 per cent which should be vaccinated.

Form 5 is a model record that can be very well used in the provinces.

No. ....

## [Form 1 (Frontside)]

## PHILIPPINE HEALTH SERVICE

## CERTIFICATE OF ..... VACCINATION

Name ..... Age ..... Sex .....

Residence ..... Occupation .....

First ..... Date ..... Reaction<sup>1</sup> .....  
(dose)Second ..... Date ..... Reaction<sup>1</sup> .....  
(dose)Third ..... Date ..... Reaction<sup>1</sup> .....  
(dose)

Vaccinated by .....

NOTE.—Call on or notify nearest Health Station if any reaction or abnormality is noticed after injection.

AVISO.—Notifique a la Estación de Sanidad más próxima si ocurre alguna reacción después de la inyección.

## [Form 1 (Backside)]

## READ CAREFULLY

Keep this card and show it to Health Officer whenever requested.

Guarde esta tarjeta y preséntela al Oficial de Sanidad siempre que se pida.

This VACCINE diminishes the risk of contracting TYPHOID or CHOL-  
Esta VACUNA reduce el peligro de contraer la TIFOIDEA o CÓLERA porERA for not less than one year.  
un año lo menos.One single injection does not protect you against TYPHOID or CHOL-  
Una sola inyección no le protege contra la TIFOIDEA o CÓLERA, necesita V.ERA, you need at least two injections.  
por lo menos dos inyecciones.VACCINE plus sanitary and hygienic living absolutely protect from  
La VACUNA más la limpieza e higiene doméstica y personal absolutamente le pro-  
TYPHOID FEVER or CHOLERA.  
tejerán contra la FIEBRE TIFOIDEA o CÓLERA.<sup>1</sup> Local only mark "L," if general "G" if both "L" and "G."

**[Form 2]**

### RECORD OF VACCINATION

[illegible]

**[Form 3]**

## MONTHLY REPORT OF ANTITYPHOID AND ANTI-CHOLERA VACCINATION

[illegible]

## [Form 4]

## RECORD OF VACCINATION BY PROVINCES

Provinces	Population	80 per cent population	First injection	Second injection	Third injection
Abra.....	81,298	65,638			
Agusan.....	52,885	42,308			
Albay.....	281,273	225,018			
Antique.....	163,552	130,842			
Bataan.....	63,082	50,466			
Batanes.....	8,214	5,771			
Batangas.....	374,057	299,246			
Bohol.....	394,991	320,993			
Bukidnon.....	48,544	38,835			
Bulacan.....	259,780	207,824			
Cagayan.....	204,041	163,233			
Camarines Norte.....	56,749	45,399			
Camarines Sur.....	226,959	181,667			
Capiz.....	318,094	254,475			
Catanduanes.....	75,997	62,798			
Cavite.....	166,622	133,298			
Cebu.....	937,719	750,175			
Cotabato.....	190,904	152,083			
Davao.....	125,762	100,610			
Ilocos Norte.....	285,605	188,484			
Ilocos Sur.....	229,719	183,775			
Isabela.....	127,955	102,364			
Iloilo.....	540,978	432,782			
Laguna.....	214,816	171,853			
Lanao.....	111,992	89,594			
La Union.....	169,930	135,944			
Leyte.....	683,761	547,009			
Marinduque.....	59,000	47,200			
Masbate.....	77,300	61,840			
Mindoro.....	85,211	68,169			
Misamis.....	225,504	180,403			
Mountain Province.....	304,066	243,253			
Nueva Ecija.....	265,254	212,203			
Nueva Vizcaya.....	35,838	28,670			
Occidental Negros.....	432,912	346,330			
Oriental Negros.....	301,684	241,347			
Palawan.....	82,747	66,198			
Pampanga.....	271,523	217,218			
Pangasinan.....	620,161	496,129			
Rizal.....	262,824	210,259			
Romblon.....	69,439	55,551			
Samar.....	426,103	340,882			
Sorsogon.....	202,232	161,786			
Sulu.....	206,516	165,273			
Surigao.....	135,279	108,232			
Tarlac.....	186,971	148,577			
Tayabas.....	236,218	188,974			
Zambales.....	89,949	71,959			
Zamboanga.....	167,553	134,042			
Total.....	11,089,563	8,871,650			

## [Form 5]

**CONSOLIDATED REPORT OF CHOLERA CASES AND OF ANTITYPHOID AND ANTI-CHOLERA VACCINATION IN THE CITY OF MANILA, DURING THE YEAR, 1925**

Municipal districts	Total number of cases vaccinated	Total number of cases not vaccinated	Total number of anti cholera vaccination	Total number of mixed vaccination		Remarks	
				First injection	Second injection		
						<i>Population</i>	
Tondo.....	5	58	24,304	46,016	32,573	78,665	
San Nicolas.....	5	12	16,291	23,479	13,834	28,416	
Binondo.....	2	4	13,416	20,385	13,048	17,171	
Santa Cruz.....	6	36	22,230	23,594	17,692	50,892	
Quiapo.....	1	7	7,911	10,491	8,174	15,454	
San Miguel.....	2	4	4,350	6,820	4,446	4,320	
Sampaloc.....	8	44	14,412	31,053	26,626	38,674	
Port Area.....		2	858	2,072	1,296	4,692	
Intramuros.....	3	8	7,897	11,162	7,939	14,249	
Ermita.....		2	4,757	8,612	7,228	15,723	
Malate.....	4	15	9,521	6,870	5,490	16,047	
Paco.....	2	9	10,415	16,207	12,784	15,623	
Pandacan.....	2		9,980	4,773	2,452	5,709	
Santa Ana.....		2	3,942	6,554	3,896	6,503	
<b>Total.....</b>	<b>40</b>	<b>203</b>	<b>150,284</b>	<b>218,088</b>	<b>157,478</b>	<b>312,138</b>	



## MISCELLANEOUS

---

### ABRA

The provincial board has approved the setting aside an amount of ₱3,472.10 from the hospital fund for the construction of a public dispensary in Bangued.

The outstanding events during the month were: The disinfection of superficial dug wells which was responsible for the remarkable decrease of deaths from dysentery; the holding of conference among presidents of Sanitary Divisions, wherein precautions to be taken during dysentery epidemic, its control, and prevention were fully discussed.

### AGUSAN

The treatment of rivers and streams put under malaria control, was considered an important activity of this office. Fortunately, this office was given sufficient fund by the provincial board for the wages of the laborers who are at present working regularly in malaria work, mainly concentrated in infected barrios like Carmen, and Cahayagan located along the coast.

The chief sanitary inspector and one well-trained assistant sanitary inspector were detailed to all places where yaws is prevalent, bringing with them 200 ampoules of neo-salvarsan in order to effect an extensive treatment of the disease. The following was the gratifying result of the campaign: Twenty-one cases were treated in Talacogon, 5 cases in Santo Tomas, 14 cases in Halapitan, 17 in Camota, 3 in Langasian; 16 in Waloe; 6 in Nueva Gracia; 15 in Johnson; and 11 in Santa Fe.

### BATAAN

An extensive vaccination campaign against cholera-typhoid is still being systematically carried on in almost all the municipalities of this district.

In the municipalities of Orion, Balanga, and Limay the fight against malaria was waged by spraying paris green regularly in places where *Anopheles larvæ funestus* or *minimus* were found. Generally speaking, the sanitary condition of those municipalities inspected was good.

### BATANGAS

The principal activities accomplished during these month were as follows: Thirty-three conferences were given by presidents of Sanitary Divisions, majority of which were held in the barrios; 14 schools were inspected and 978 school children were physically examined; 68 persons were injected with pure cholera vaccine; 6 persons with pure typhoid; and 382 with mixed vaccine; 98 Antipolo closets are being constructed; house-to-house inspections by the sanitary personnel; sanitary inspections of hotels, *carenderias*, *panciterias*, and other food-stuff factories, and general disinfestation of public markets and closets.

The general health condition of the district is excellent as shown by the considerable fall of the health barometer and the remarkable decrease of deaths as compared to that of last month, the health index being 15.35 as against 17.46 of last month.

#### BUKIDNON

The intensive campaign against yaws was continued during the month. Neo-salvarsan injections were administered to persons suffering from yaws in all places inspected. The malaria campaign by the use of the paris green is likewise continued.

Antileprotic treatment of lepers in the detention camps, antityphoid injections, and antismallpox vaccinations, physical examination of the pupils in the barrios inspected, were also performed.

#### CAPIZ

The health condition in the province has not gone beyond normal as shown by our health barometer. It is true that there are some sporadic cases of dysentery, but they have not come to the extent of an epidemic form due to sanitary and prophylactic measures taken at all times. Cases of influenza and other respiratory diseases have slightly increased due to the change of weather conditions which are favorable for such diseases.

#### DAVAO

The general mortality rate for this month is much lower as that of the same period of last year. Although malaria fever continues to head the list of communicable diseases recorded, yet the total number registered during the month is also lower than that registered for the same period of last year. Isolated cases of influenza were reported during this month, but this disease was rather mild in character, and no deaths were recorded. Infantile beriberi seemed to have slightly increased. Speaking in general terms, the health condition of this district is satisfactory.

#### ILOCOS NORTE

The general health condition during the month in the province was entirely satisfactory, as shown by the low rate of mortality. No incidence of communicable disease was ever registered. Much time of this office was devoted to bonded lepers in connection with the preparation for their transportation for Manila, and also the inspection of public dispensaries.

#### ILOCOS SUR

In an inspection trip made by the district health officer in the different municipalities, lectures on hygiene and sanitation were given by him.

The barrio of Libang, Cervantes, was especially visited in order to investigate the prevalence of malaria therein. Steps were taken in connection with the malaria campaign and instructions were duly given to the corresponding presidents of Sanitary Divisions to this end.

#### ILOILO

A public meeting was called by the district health officer in the province for the purpose of securing voluntary contributions for the erection of a dispensary building in Cabudian and Dueñas.

The following places were inspected during the month: Pototan, barrio Tabucan and Catholic cemetery of same; Jamay and Catholic cemetery of

the same; Santa Barbara and barrio Zarraga of same; Maasin and districts around water-works dam in same; Pavia; Jaro; San Miguel; Alimodian; Passi; and barrio San Enrique of same; Dueñas and barrio Cabudian of same; Arevalo; Oton; Tigbauan; Guimbal; Miagao; San Joaquin and barrio Tiolas of same and cemetery of Iloilo City.

#### LA UNION

Efforts were exerted by this office to secure an amount of ₱3,000 for the Lepers' Detention Camp at the beginning of the next year 1928.

A suggestion was presented to the division superintendent of schools to put aside one day, during the schooldays as a health day. This plan is still under consideration of the school head.

The general health condition of the province is good. No epidemic was registered during the month. The prevailing disease recorded were respiratory system trouble, congenital debility, and senility.

#### LAGUNA

A small outbreak of typhoid fever occurred among school children of Santa Rosa, which is believed to have been caused by the insanitary *tiendas* in the school neighborhood. The closing of these *tiendas* was ordered. An intensive preventive vaccination as well as cleaning of premises and toilets were conducted. It is gratifying, indeed, that thru these measures the disease was stamped out.

#### LANAO

During the month anti-smallpox vaccination by the Vaccinating Party No. 7, was conducted in Ganassi and Marantao districts with a fairly good result, especially, in the former place. A very few number of Moros have refused to be vaccinated. In Maratao attempts were made to make the rate of vaccination record in each barrio as high as possible, and thru the coöperation of the provincial governor and influential datu many Moros have been vaccinated. On the latter part of the month, the remotest barrios or sitios of Maratao district were visited, and it was found out that houses are very far part, and a barrio consists sometimes only of 4 or 5 houses. Constabulary soldiers who acted as guards have rendered valuable assistance to the vaccinators.

During the month 73 patients were admitted in the hospital 17 of whom were Non-Christians. It is encouraging to note that the Moros come to the dispensaries to seek treatment of their sickness, and submit themselves to operation. There was one Moro operated on during the month in the hospital.

#### MISAMIS

The late Chief Sanitary Inspector Nicolas Raagas died of carbuncle trouble at the Misamis Public Hospital on November 20th.

Chief Sanitary Inspector N. Raagas was one of the oldest employees of this district, having rendered about 12 years of continuous, faithful, and satisfactory service. This district, therefore, has suffered a great loss with his death.

The general health condition of the province is fair, due to the epidemic of influenza, measles, and gastro-enteritis, which are still prevalent in Balingasag and Mambajao. The cases in Cagayan and Plaridel are almost under control.

### NUEVA ECIJA

One worthy accomplishment during this month was the inspection of the drainage system at Guimba market to determine its sanitary efficiency. The inspection of fresh milk for public sale has been made in Cabanatuan. Four venders were prosecuted for selling adulterated milk.

The general health condition in the province was good.

### NUEVA VIZCAYA

This office has sent advanced announcements to the different municipalities informing all municipal presidents that the district health officer would hold free consultations and treatments to all indigents in their respective municipalities. Bandillos were, therefore, posted, and during stated dates, consultations and treatments were given to the sick.

Inspections were also made in the offices of the sanitary inspectors and instructions were given as to the use of simple remedies. Malaria control areas, public grounds, cemeteries, market buildings, and slaughterhouses were also inspected. Municipal officials were informed of the insanitary conditions of the public closets, presidencia buildings, and request was made for their sanitary improvement.

Fourteen new Antipolo closets were constructed during the month, 188 drinking wells inspected; 23 public health lectures given, with an attendance of approximately 815; 393 vaccinations with 381 inspections 182 of which were positive; 313 indigents treated and seven public schools inspected during the period.

### RIZAL

A lecture was given by District Health Officer F. Simpao before the Rizal High School students. The following places inspected were: Caloocan, Malabon, Navotas, Pasay, San Felipe, Antipolo, San Francisco, San Juan, Pateros, Tagig, Muntinlupa, Sukat, Parañaque, Las Piñas, Culiculi, Binangonan, Cardona, Morong, Baras, Tanay, Pililla, Marikina, San Mateo, Montalban, Taytay, and Cainta.

### SORSOGON

Four lepers, all of whom were chemically positive, were sent to Tahiran Camp, making a total of twelve (12) lepers confined in the Camp ready for collection. During the recent visit of General Nathorst, of the Constabulary, together with the provincial governor, Ex-Senator Vicente de Vera, the provincial commander of Sorsogon and district health officer, inspected both the Tahiran and Pinaculan Islands on November 28, 1927.

The general health condition of the district was below normal, and no epidemic was registered during the month. The prevailing diseases during the month were: Acute bronchitis, tuberculosis of the respiratory system, congenital debility, convulsion of infants, infantile beriberi, bronchopneumonia, intestinal parasites, malaria, and influenza.

### TARLAC

The general health condition of this district was good. The prevalent diseases registered during the month were: Infantile beriberi, influenza, malaria, and tuberculosis of the respiratory system.

### THE AMERICAN BOARD OF OTOLARYNGOLOGY

An examination was held in Detroit on September 12th, during the session of the American Academy of Ophthalmology and Otolaryngology.

One hundred and two applicants appeared for examination, with .107 per cent failures. In the course of the past year, 369 applicants have been examined.

In 1928, examinations will be held in Minneapolis, on June 11th at the session of the American Medical Association, and in St. Louis on October 15th, during the meeting of the American Academy of Ophthalmology and Otolaryngology.

Prospective applicants for certificates should address the Secretary, Dr. W. P. Wherry, 1500 Medical Arts Building, Omaha, for proper application blanks.

## CHALLENGES SCIENCE TO PREVENT DISEASE

### CINCINNATI

The fifty-sixth annual meeting of the American Public Health Association was opened by Dr. Charles Value Chapin with a plea for unremitting research into the cause and prevention of disease.

Doctor Chapin, president of the association, is health commissioner of Providence, R. I.

"What is not known about maintaining and perfecting the health of mankind," he said, "is far greater than what is known. The opportunities for discovery are as great today as before the days of Harvey, Pasteur, and Lister. Science can never be a closed book. We should not be ashamed to change our methods, rather we should be ashamed never to do so.

"The science which can point to its achievements against smallpox, malaria, yellow fever, diphtheria, typhus and typhoid fevers, tuberculosis, and a score of other diseases, as well as to a rapid lengthening of human life, and especially to the saving of vast members of infant from early death, need not be ashamed to acknowledge that some experiments have failed."

Existence of 100,000 blind people problem facing every health officer, educator and employer, Dr. B. Franklin Royer, medical director of the National Committee for the Prevention of Blindness, told the association.

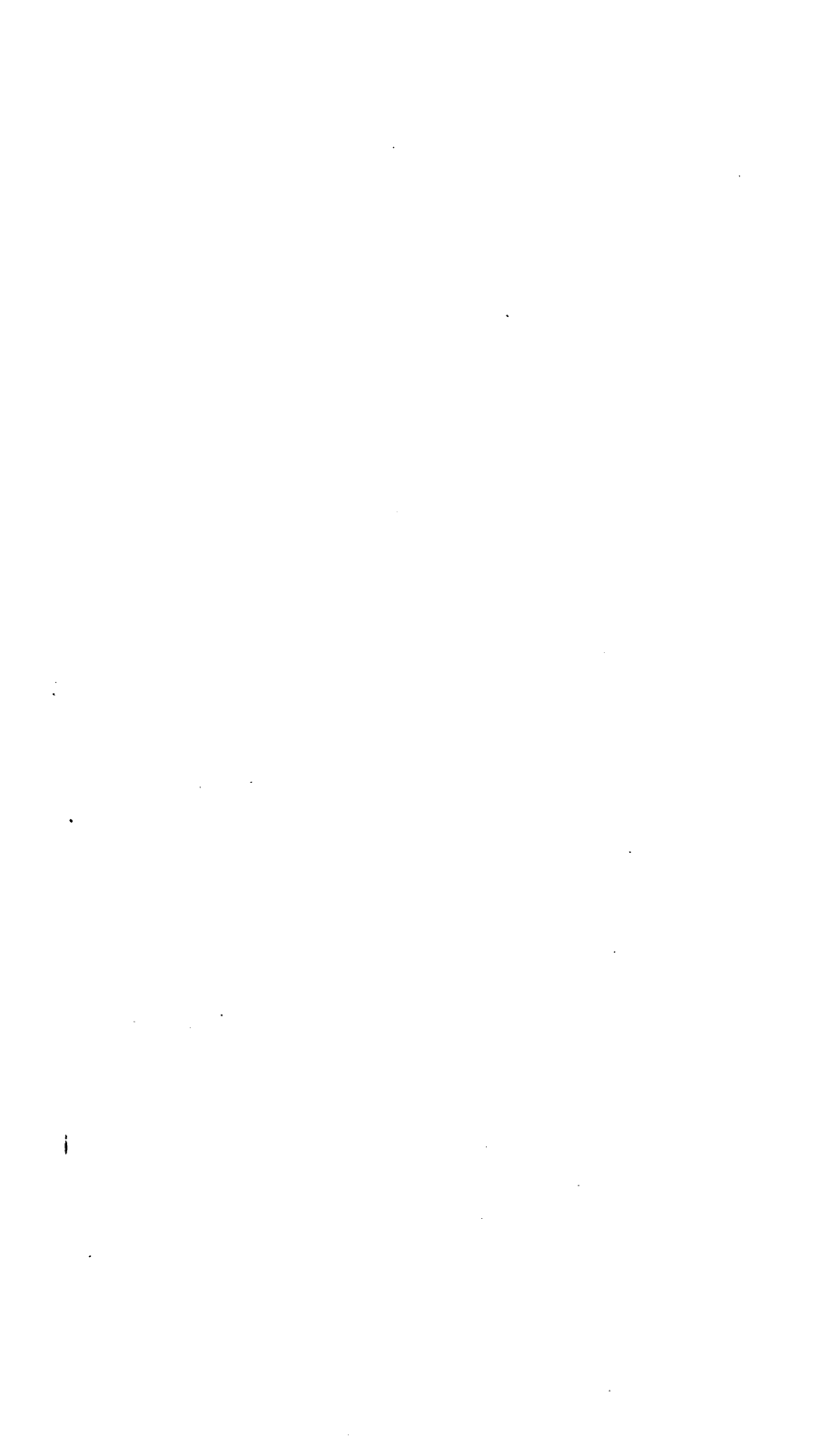
Doctor Royer reviewed the fight being waged against blindness and told how programs of sight conservation have been developed in schools, industries, and homes by education and supervision of lighting conditions.

In its preventive campaign, he said, his committee has extended its activities to the child of preschool aged.

## STUDENTS' PROFIT FROM SLUMMING

A large group of students of the University of the Philippines visited the slums of Manila led by Acting President Bocobo and the student committee in civic movements. They went to Magdalena, Palomar, Antonio Rivera, Calle Velasquez (Tondo), and Sampalucan, Intramuros. The students were deeply moved with sympathy by the squalid living conditions of the poor and the congestion in these districts.

These slumming expeditions are made possible by the coöperation of the Health Service, Dr. Mariano Santos accompanied the student visitors and showed them the health problems of the city. They declared that they derived constructed lesson from these visits and hope that the students in general will take deeper interest in the poor classes.



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of November, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1927<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans .....	3,184
Filipinos .....	294,187
Spaniards .....	1,955
Other Europeans .....	1,126
Chinese .....	17,856
All others .....	2,186
<b>Total .....</b>	<b>820,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo .....	80,745
2. San Nicolas .....	29,168
3. Binondo .....	17,625
<b>Total .....</b>	<b>127,538</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz .....	52,238
5. Quiapo .....	16,862
6. San Miguel .....	4,434
7. Sampaloc .....	39,698
<b>Total .....</b>	<b>112,232</b>
<b>No. III, PACO:</b>	
8. Port Area .....	4,816
9. Intramuros .....	14,625
10. Ermita .....	16,139
11. Malate .....	16,471
12. Paco .....	16,037
13. Pandacan .....	6,861
14. Santa Ana .....	6,675
<b>Total .....</b>	<b>80,624</b>
<b>Grand total .....</b>	<b>320,394</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, NOVEMBER, 1927**

Date	Pres- sure mean <sup>1</sup>	Temperature					
		In shade <sup>2</sup>					Underground
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.
							8 a. m. mean      2 p. m. mean
	mm.	°C.	°C.		°C.		°C.
1-10.....	759.64	26.2	31.8	4	22.1	4	29.3
11-20.....	59.68	26.0	32.4	12	22.5	13	29.1
21-30.....	59.40	25.6	32.7	23	19.4	27	29.0

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	82.1	91.2	1	75.8	7
11-20.....	84.6	92.3	19	76.4	12
21-30.....	81.7	85.6	24	79.6	27

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	NE	904.0	116.0	7	23.5	3.4	4
11-20.....	NE	856.5	144.0	14	17.5	3.6	12
21-30.....	E quad	1,262.0	173.5	22	27.5	3.2	27

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	46 55	9 35	4	31.1	3
11-20.....	37 15	7 25	11	38.8	5
21-30.....	77 05	9 50	26	11.5	1

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity, —1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	5	6	11	42.73
Filipinos.....	640	598	1,238	51.24
Spaniards.....	4	3	7	43.59
Other Europeans.....	2	3	5	51.06
Chinese.....	33	33	66	45.00
All others.....	5	9	14	77.97
Total and average.....	689	652	1,341	50.96



## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I, MEISIC:							
1. Tondo.....	187	183	370	10	10	20	390
2. San Nicolas.....	48	29	77	8	1	9	86
3. Binondo.....	28	26	54	.....	2	2	56
Total.....	263	238	501	18	13	31	532
No. II, SAMPALOC:							
4. Santa Cruz.....	84	83	167	1	8	9	176
5. Quiapo.....	14	18	32	.....	2	2	34
6. San Miguel.....	9	12	21	.....	.....	.....	21
7. Sampaloc.....	109	97	206	4	6	10	216
Total.....	216	210	426	5	16	21	447
No. III, PACO:							
8. Port Area.....	.....	2	2	.....	.....	.....	2
9. Intramuros.....	22	22	44	1	.....	1	45
10. Ermita.....	28	38	66	1	4	5	71
11. Malate.....	62	48	110	4	4	8	118
12. Paco.....	30	23	53	.....	4	4	57
13. Pandacan.....	16	11	27	.....	1	1	28
14. Santa Ana.....	21	19	40	2	.....	2	42
Total.....	179	163	342	8	13	21	363
Grand total.....	658	611	1,269	31	42	73	1,342

Attended by physicians, living, 395; stillbirths, 16.

Attended by midwives, living, 813; stillbirths, 0.

Attended by families, living, 134; stillbirths, 18.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	.....	.....	.....	.....
Filipinos.....	294	228	522	21.61
Spaniards.....	1	1	2	12.45
Other Europeans.....	.....	.....	.....	.....
Chinese.....	9	4	13	8.86
All others.....	2	.....	2	11.14
Total and average.....	306	233	539	20.48

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA  
BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MRRISIC:</b>			
1. Tondo.....	85	60	145
2. San Nicolas.....	21	14	35
3. Binondo.....	3	4	7
Total.....	109	78	187
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	73	45	118
5. Quiapo.....	11	8	19
6. San Miguel.....	3	4	7
7. Sampaloc.....	46	35	81
Total.....	133	92	225
<b>No. III, PACO:</b>			
8. Port Area.....			
9. Intramuros.....	5	8	13
10. Ermita.....	7	5	12
11. Malate.....	24	17	41
12. Paco.....	11	21	32
13. Pandacan.....	7	7	14
14. Santa Ana.....	10	5	15
Total.....	64	63	127
<b>Grand total.....</b>	<b>306</b>	<b>233</b>	<b>539</b>

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	111	68
Divorced.....		
Widowed.....	39	15
Single.....	214	149
Conditions not stated.....	1	4
Total.....	365	266
<b>Grand total.....</b>	<b>631</b>	

Stillbirths ..... 31

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	98	55	5	7	165
1 year plus.....	26	34	4	.....	64
2 years plus.....	6	8	.....	.....	14
3 years plus.....	7	6	1	.....	14
4 years plus.....	3	4	.....	1	8
5 to 9 years.....	11	14	2	1	28
10 to 14 years.....	2	.....	1	.....	3
15 to 19 years.....	10	11	6	1	28
20 to 24 years.....	16	8	3	1	28
25 to 29 years.....	14	12	2	1	29
30 to 34 years.....	16	7	2	2	27
35 to 39 years.....	16	11	6	2	35
40 to 44 years.....	6	12	5	3	26
45 to 49 years.....	12	7	4	3	26
50 to 54 years.....	12	4	5	4	25
55 to 59 years.....	11	7	4	.....	22
60 to 64 years.....	10	6	3	1	20
65 to 69 years.....	9	5	2	1	17
70 to 74 years.....	6	6	1	.....	13
75 to 79 years.....	5	3	1	1	10
80 to 84 years.....	6	6	1	1	14
85 to 89 years.....	1	1	.....	.....	2
90 to 94 years.....	1	2	.....	1	4
95 to 99 years.....	1	4	.....	.....	5
100 years and over.....	1	.....	.....	.....	1
Age not stated.....	.....	.....	.....	.....	.....
Total.....	306	233	58	31	628

One male and one female Filipinos, 48 years and about 70 years respectively, and one female Chinese, age unknown, whose permanent residences are unknown, not included in the above table.















NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

666

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
160-163	<i>XII. Early infancy</i>													
160	Congenital debility, icterus, and sclerema			1	1									2
161	Premature birth; Injury at birth:													
	a. Premature birth (not stillborn)				1									1
162	Other diseases peculiar to early infancy			1										1
164-	<i>XIII. Old age</i>													
164	Senility				1									1
165-203	<i>XIV. External causes</i>													
182	Accidental drowning													1
185	Accidental traumatism by fall			1						1				1
188	Accidental traumatism by other crushing (vehicles, railways, landlides, etc.):													
	e. Motorcycle accidents	1		2										1
198	Homicide by cutting or piercing instruments													2
	Total	1	1	52	30			1		4				89
	Grand total	2		82				1		4				89

**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF NOVEMBER, 1927 (INCLUDING TRANSIENTS)**

[Stillbirths not included]

Causes of death	Grand total		Age at death under 1 month										Total under 1 month	
			Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 31 days			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
All causes.....	103	62	17	7	16	18	5	4	3	3	4	1	45	33
COMMUNICABLE DISEASES:														
Typhoid and paratyphoid fever (1).....														
Smallpox (6).....														
Measles (7).....														
Whooping-cough (9).....														
Diphtheria (10).....														
Influenza (11).....														
Asiatic cholera (14).....														
Dysentery (16).....														
Meningococcus meningitis (24).....														
Other epidemic and endemic diseases (25).....														
Tetanus (29).....														
Other infectious diseases (1-42) 1.....														
Beriberi (55).....														
Diseases of the nervous system (70; 71; 80; 85).....														
Respiratory diseases (99; 100; 101; 107).....														
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....														
Congenital malformation (159).....														
Early infancy (160; 161; 162; 163).....														
All other causes (43-206) 1.....														

¹ Other than those specified above.

**NOTE.**—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.



## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set .....	21,840
Number of rats caught by spring traps.....	3,240
Number of cage wire traps set.....	577
Number of rats caught by cage wire traps.....	1
Number and kind of baits (coconuts).....	22,464
Number of poison portions placed.....	19,959
Number of rats found poisoned.....	309
Number of rats killed by clubs and other weapons.....	930
Number of rats found dead from other causes.....	501
Total number of rats otherwise caught, found dead or killed .....	4,981
Total number of rats sent to the laboratory for examination .....	4,981
Total number of rats found positive for plague .....	0

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF NOVEMBER, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	No. 1.....	4			2	1			6	1	4	2	10	3
	No. 2.....	3	4	2					3		1		4	
	No. 3.....		1											
	No. 8.....													
II.....	No. 4.....	8	4						8	1	4		12	1
	No. 5.....	1	1						1		1		2	
	No. 6.....													
	No. 7.....	2							2				2	
III.....	No. 9.....	2	1						2	1			2	1
	No. 10.....													
	No. 11.....													
	No. 12.....	1	1						1	1	1		1	1
	No. 13.....			1									1	
	No. 14.....													
Grand total.....		21	3	11	2	2	1		23	4	11	2	34	6

**REMARKS:**

Cases reported as typhoid fever.....	33
Cases reported as paratyphoid fever.....	1
By autopsy.....	
By blood culture.....	0
By Widal reaction.....	1
By urine examination.....	7
By feces examination.....	0
By clinical symptoms.....	26
Cases reported among nonresident persons not included in the table.....	14
Deaths reported among nonresident persons not included in the table.....	5

Typhoid carrier—2

DYSENTERIES REPORTED DURING THE MONTH OF NOVEMBER, 1927, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total			
	Male		Female		Male		Female		Male		Female	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I. {No. 1.....					1	1			1	1		1
No. 2.....												1
No. 3.....												2
No. 4.....	3	2							3	2		3
No. 5.....	4	1	3	2					4	1	3	1
No. 6.....	1								1			1
No. 7.....	2		1		1	1	2		3	1	3	6
No. 8.....												1
No. 9.....	1								1			1
No. 10.....												1
No. 11.....			1	1							1	1
No. 12.....											2	2
No. 13.....											2	2
No. 14.....												
Grand total.....	11	3	5	3	2	2	6	4	13	5	11	7
												24
												12

REMARKS:

Amoebic dysentery.....

Bacillary dysentery.....

Unspecified.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Dysentery carrier—5

2  
18  
4  
7  
5

**CHOLERA REPORTED DURING THE MONTH OF NOVEMBER, 1927, CITY OF MANILA**

**CONFIRMED CASES**

Health districts	Hospital						Home				Total				Grand total	
	Male			Female			Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths				
I.....	No. 1.....															
	No. 2.....															
	No. 3.....															
	No. 4.....															
II.....	No. 5.....															
	No. 6.....															
	No. 7.....															
	No. 8.....															
III.....	No. 9.....															
	No. 10.....															
	No. 11.....															
	No. 12.....															
	No. 13.....															
	No. 14.....															
	Grand total.....															

**REMARKS:**

No nonresident case was reported during the month.

Cholera carrier—14.



**DIPHTHERIA REPORTED DURING THE MONTH OF NOVEMBER, 1927, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. ...	No. 1	1	1	1							1		1	
No. 2														
No. 3														
No. 4	2	1	5	1					2	1	5	1	7	2
No. 5			1								1		1	
No. 6														
No. 7			2								2		2	
No. 8														
No. 9														
No. 10	1		2	1					1		2	1	3	1
No. 11														
No. 12														
No. 13														
No. 14														
Grand total	3	1	11	2					3	1	11	2	14	3

**REMARKS:**

Cases reported among nonresident persons not included in the table.....

1

Deaths reported among nonresident persons not included in the table.....

1

Diphtheria carrier—8

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF NOVEMBER, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	5	5	1	2
Varicella.....	2	3		
Varioloid.....				
Smallpox.....				
Measles.....	1	5		2
Whooping cough.....				
Influenza.....	3	2	1	1
Bubonic plague.....				
Encephalitis lethargica.....	1		1	
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	132	118	66	53
Tuberculosis of the other organs.....	8	5	8	5
Beriberi, infantile.....	13	9	13	9
Beriberi, adult.....		1		1

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	12	1	1	1
Varicella.....	1			
Varioloid.....				
Smallpox.....				
Measles.....				
Whooping cough.....				
Influenza.....	2	1	1	1
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	14	15	5	2
Tuberculosis of the other organs.....	1	1	1	1
Beriberi, infantile.....	1	1	1	1
Beriberi, adult.....				

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES FOR  
THE MONTH OF NOVEMBER, 1927**

Sera and vaccines	On hand November 1, 1927	Received during the month	Total to be accounted for	Distrib- uted during the month	Remain- ing at the end of the month
Antidiphtheric serum (units).....	790,000		790,000	300,000	490,000
Antitetanic serum (units).....	600,000		600,000	300,000	300,000
Antidyenteric serum (ampoules).....	32	200	232	155	77
Normal horse serum (ampoules).....					
Gonococcus vaccine (ampoules).....					
Streptococcus vaccine (ampoules).....					
Dysenteric vaccine (c.c.).....	4,200	24,000	28,200	27,600	600
Combine vaccine (c.c.).....	35,100	120,000	155,100	97,800	57,300
Cholera vaccine (c.c.).....	15,900		15,900	15,000	900
Typhoid vaccine (c.c.).....	11,520	24,000	35,520	17,700	17,820
Fresh vaccine virus (units).....	134,200	100,000	234,200	146,500	87,700
Dried vaccine virus (units).....	102,900	50,000	152,900	67,200	85,700

REPORT OF ANTI-SMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF NOVEMBER, 1927

675

Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated							
		Total vaccinations	Previously vaccinated			Under 1 year		1 to 4 years		5 years and over		Total
			Never	Successfully	Unsuccessful	Positive	Negative	Positive	Negative	Positive	Negative	
No. 1.	Tondo.....	627	577	.....	50	590	27	.....	.....	590	27	627
	San Nicolas.....	863	57	798	8	86	6	.....	.....	86	6	863
	Binondo.....	109	109	.....	.....	27	.....	.....	.....	27	.....	109
	Santa Cruz.....	647	100	539	8	128	2	.....	.....	315	62	443
	Quilapo.....	23	21	.....	2	21	1	.....	.....	.....	.....	21
No. 2.	San Miguel.....	102	86	.....	16	10	.....	.....	.....	10	.....	102
	Sampaloc.....	203	190	2	11	217	11	.....	.....	.....	.....	217
	Port Area.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1
	Intramuros.....	438	85	323	30	70	14	3	1	.....	73	15
	Ermita.....	124	98	.....	26	106	11	.....	.....	106	11	124
No. 3.	Malate.....	165	120	.....	45	104	13	.....	.....	104	13	165
	Paco.....	158	97	3	58	65	12	.....	.....	65	12	158
	Pandacan.....	51	46	.....	5	47	6	.....	.....	47	6	51
	Santa Ana.....	39	35	.....	4	31	4	.....	.....	31	4	39
	Total.....	3,549	1,621	1,665	263	1,503	107	3	1	315	62	1,821

Vaccine virus:

Remaining from last month.....	9,342	Units
Received during the month.....	5,450	Units
Used during the month.....	6,460	Units
Remaining for next month.....	8,332	Units
Total.....	14,792	Units
	14,792	Units

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF NOVEMBER, 1927**

676

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.....	Tondo.....	6	3	2	2	8	5
	{ San Nicolas.....	3	2	1	1	4	3
	Binondo.....	595	250	2,041	1,250	2,636	1,500
	{ Santa Cruz.....	15	14	2	1	17	15
	Quiapo.....	5	2	1	.....	6	2
No. 2.....	{ San Miguel.....	80	9	10	5	90	14
	Sampaloc.....	.....	.....	.....	.....	.....	.....
	{ Port Area.....	22	321	541	196	563	517
	Intramuros.....	.....	.....	.....	.....	.....	.....
	{ Ermita.....	14	9	3	3	17	12
No. 3.....	Malate.....	.....	3	.....	3	.....	6
	Paco.....	.....	.....	.....	.....	.....	.....
	{ Pandacan.....	.....	.....	.....	.....	.....	.....
	Santa Ana.....	.....	.....	.....	.....	.....	.....
	Total.....	740	613	2,601	1,461	3,341	2,074

Health districts	Municipal districts	Number of injections made in—												Total number of injections					
		Adults						Children						Total number of injections					
		First injections		Second injections		Third injections		First injections		Second injections		Third injections		First		Second		Third	
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1. ....	Tondo.....	1,293	1,050	.....	1,778	22	513	2	939	1	402	22	1,806	2	1,989	1	2,180		
	San Nicolas.....	1,321	840	.....	906	12	320	7	810	2	519	12	1,641	7	1,650	2	1,425		
	Binondo.....	532	430	.....	348	.....	240	.....	216	.....	83	.....	772	.....	646	.....	431		
No. 2 ....	Santa Cruz.....	1,332	720	.....	616	3	337	.....	265	242	.....	3	1,669	.....	985	.....	858		
	Quiapo.....	339	265	.....	218	.....	93	.....	139	162	.....	.....	432	.....	404	.....	380		
	San Miguel.....	83	64	.....	58	.....	63	.....	63	42	.....	.....	146	.....	117	.....	100		
	Sampaloc.....	1,550	1,320	.....	1,840	.....	2,690	.....	2,018	1,492	.....	.....	4,240	.....	3,338	.....	3,332		
No. 3 ....	Port Area.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Intramuros.....	436	312	.....	252	8	83	5	103	86	.....	8	519	5	415	.....	338		
	Ermita.....	834	420	.....	17	.....	39	.....	188	4	.....	.....	873	.....	608	.....	21		
	Malate.....	602	363	.....	307	12	897	7	1,389	5	1,229	12	1,499	7	1,752	5	1,536		
	Paco.....	537	469	.....	206	.....	857	.....	820	187	.....	.....	1,394	.....	1,289	.....	393		
	Pandacan.....	337	202	.....	205	42	105	20	60	79	.....	42	442	20	262	.....	284		
	Santa Ana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Total .....	9,196	6,455	.....	6,751	99	6,237	41	7,000	8	4,527	99	15,433	41	13,456	8	11,278		

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

"V," in persons never vaccinated before; "R," revaccinations.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	14,026	2,738	4,009	7,279
Agusan.....	8,948	2,199	3,273	3,476
Albay.....	52,520	10,423	10,704	31,393
Antique.....	16,252	4,170	7,615	4,467
Bataan.....	13,166	4,874	4,095	4,197
Batanes.....	3,493	235	761	2,497
Batangas.....	54,539	16,066	11,699	26,784
Bohol.....	25,983	9,843	6,167	9,973
Bukidnon.....	7,645	2,313	2,166	3,166
Bulacan.....	24,462	8,569	7,917	7,976
Cagayan.....	78,167	15,538	47,669	14,960
Camarines Norte.....	15,418	3,264	5,716	6,438
Camarines Sur.....	32,219	8,658	9,519	14,042
Capiz.....	42,088	9,455	18,938	13,695
Catanduanes.....	17,144	3,707	2,855	10,582
Cavite.....	50,942	6,812	33,829	10,301
Cebu.....	122,184	40,518	17,525	64,141
Cotabato.....	28,003	7,860	8,717	11,426
Davao.....	37,442	17,071	11,284	9,137
Ilocos Norte.....	37,293	6,909	13,505	16,879
Ilocos Sur.....	32,688	7,872	4,890	19,925
Iloilo.....	180,650	34,495	73,820	22,335
Isabela.....	35,759	8,546	23,027	4,186
Laguna.....	94,916	13,284	66,535	15,097
Lanao.....	37,639	14,225	17,113	6,301
La Union.....	28,129	5,916	311	21,902
Leyte.....	136,741	40,259	50,100	46,382
Marinduque.....	61,694	5,142	41,711	14,841
Masbate.....	42,605	6,761	25,579	10,265
Mindoro.....	7,247	1,627	1,915	3,705
Misamis.....	26,574	9,201	2,864	14,509
Mountain Province.....	56,336	15,926	29,744	10,666
Nueva Ecija.....	30,958	12,340	5,926	12,692
Nueva Vizcaya.....	4,878	1,491	760	2,627
Occidental Negros.....	37,463	19,708	5,111	12,644
Oriental Negros.....	35,200	11,377	10,706	13,117
Palawan.....	3,576	1,064	1,635	877
Pampanga.....	34,484	10,076	10,731	13,677
Pangasinan.....	58,064	19,441	8,446	30,177
Rizal.....	16,162	6,486	5,406	4,270
Romblon.....	41,677	7,139	23,757	10,781
Samar.....	95,909	16,901	39,910	39,098
Sorsogon.....	29,998	12,570	308	17,120
Sulu.....	33,749	20,719	4,521	8,509
Surigao.....	8,172	3,747	839	3,586
Tarlac.....	27,806	6,251	15,929	5,626
Tayabas.....	39,077	15,908	8,339	14,830
Zambales.....	11,689	4,083	2,424	5,182
Zamboanga.....	12,636	3,709	1,744	7,183
<b>Total.....</b>	<b>1,894,410</b>	<b>517,476</b>	<b>712,014</b>	<b>664,920</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	1,072	582	2,329	1,782	2,522	4,353	5,923	6,717
Agusan.....	318	257	472	286	1,606	1,134	2,396	1,677
Albay.....	4,755	1,453	6,673	1,657	11,236	5,200	22,664	8,310
Antique.....	1,641	466	1,807	1,183	1,675	2,190	5,123	3,839
Bataan.....	2,571	510	3,361	1,406	2,820	1,174	8,752	3,090
Batanes.....	307	98	671	241	1,047	515	2,025	854
Batangas.....	8,036	2,059	11,604	4,756	10,997	8,934	30,637	15,749
Bohol.....	3,800	1,201	4,552	1,944	6,078	4,596	14,430	7,741
Hukidnon.....	167	188	614	705	1,889	2,972	2,670	3,865
Bulacan.....	6,976	1,241	5,143	2,001	4,853	3,019	16,972	6,261
Cagayan.....	5,478	912	9,265	2,071	20,424	20,491	35,167	23,474
Camarines Norte.....	1,958	399	2,921	722	4,495	1,939	9,374	3,060
Camarines Sur.....	5,196	1,736	4,975	1,752	10,051	4,944	20,222	8,432
Capiz.....	3,274	697	4,604	2,025	13,791	6,620	21,669	9,342
Catanduanes.....	1,318	753	1,468	871	2,111	1,415	4,897	3,039
Cavite.....	5,276	860	5,178	1,925	14,197	15,060	24,651	17,845
Cebu.....	12,304	3,967	14,006	4,919	15,152	15,053	41,462	23,939
Cotabato.....	845	603	2,021	1,937	6,368	5,854	9,234	8,394
Davao.....	1,114	382	3,170	1,209	14,105	6,396	18,389	7,987
Ilocos Norte.....	4,511	1,427	6,560	2,417	8,715	9,341	19,786	13,185
Ilocos Sur.....	3,699	1,318	5,746	2,418	6,090	6,185	15,535	9,921
Iloilo.....	8,187	1,259	16,528	4,540	37,435	31,709	62,150	37,508
Isabela.....	2,242	1,017	4,627	1,474	10,517	8,019	17,386	10,510
Laguna.....	4,910	1,186	7,767	3,333	22,386	23,837	35,063	28,356
Lanao.....	623	152	2,677	706	9,338	4,701	12,638	5,559
La Union.....	3,615	1,090	4,415	3,472	3,868	5,689	11,898	10,251
Leyte.....	5,612	1,628	17,458	4,553	40,810	17,398	63,880	23,579
Marinduque.....	1,393	417	3,928	1,271	22,121	10,328	27,442	12,016
Masbate.....	1,364	406	3,533	991	12,950	7,818	17,847	9,215
Mindoro.....	886	319	796	383	1,914	1,394	3,596	2,096
Misamis.....	1,633	647	2,525	1,314	4,293	2,800	8,451	4,761
Mountain Province.....	1,685	329	4,980	1,258	19,454	10,701	26,119	12,288
Nueva Ecija.....	5,001	1,743	7,167	2,913	5,063	4,894	17,231	9,550
Nueva Vizcaya.....	715	316	627	582	889	1,483	2,231	2,381
Occidental Negros.....	6,618	1,391	7,736	2,369	7,431	3,040	21,785	6,800
Oriental Negros.....	4,637	1,415	5,044	2,435	9,215	5,100	18,896	8,950
Palawan.....	215	77	412	219	1,217	957	1,844	1,253
Pampanga.....	3,693	992	2,998	1,092	5,002	4,968	11,693	7,052
Pangasinan.....	10,384	2,552	11,815	4,064	10,635	9,954	32,834	16,570
Rizal.....	3,457	1,805	1,550	914	2,180	2,879	7,187	5,598
Romblon.....	1,650	260	4,919	1,399	15,019	10,927	21,588	12,586
Samar.....	4,076	1,458	9,280	5,166	24,766	15,577	38,122	22,201
Sorsogon.....	2,476	1,002	5,376	2,384	8,664	4,489	16,516	7,875
Sulu.....	1,710	547	5,994	1,726	10,274	4,032	17,978	6,305
Surigao.....	997	365	1,337	520	2,120	1,146	4,454	2,031
Tarlac.....	2,618	1,073	4,184	2,526	5,008	8,119	11,810	11,718
Tayabas.....	5,815	982	8,149	1,823	13,352	6,716	27,316	9,521
Zambales.....	2,042	544	1,945	1,062	1,799	2,832	5,786	4,438
Zamboanga.....	691	717	1,239	1,540	1,889	2,766	3,819	5,023
Total.....	163,561	46,798	246,146	94,256	469,831	341,658	879,538	482,712

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLOERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	24,701	8,766	143	33,610
Antique.....	18,625	9,159		27,784
Bataan.....	1,972			1,972
Batangas.....	21,318	40		21,358
Bulacan.....	190,213	4,233		194,446
Camarines Norte.....	1,841	10		1,851
Camarines Sur.....	27,684	1,035		28,669
Capiz.....	13,516	6,008		19,524
Catanduanes.....	895	368		1,263
Cavite.....	336			336
Cebu.....	57			57
Ilocos Norte.....	15,428	7,687		23,115
Ilocos Sur.....	47	32		79
Iloilo.....	21,297	4,388		25,685
Isabela.....	570	253		823
Laguna.....	6,928	1,243		8,171
Lanao.....	1,140	764		1,904
Leyte.....	61,048	20,865		81,913
Marinduque.....	502	280		782
Masbate.....	223	108		331
Mindoro.....	402			402
Nueva Ecija.....	148	57		205
Pampanga.....	49,234	6,183		55,417
Pangasinan.....	9,683	5,483		15,116
Rizal.....	62,834	14,687		77,521
Romblon.....	6,007	164		6,171
Samar.....	3,820	1,274	99	5,193
Sorsogon.....	7,270	908		8,178
Tarlac.....	8,134	1,973		10,107
<b>Total.....</b>	<b>555,773</b>	<b>95,968</b>	<b>242</b>	<b>651,983</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.



**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY  
VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Total
Agusan	812	277	1,089
Albay	329	185	514
Antique	694	386	1,020
Bataan	743	610	1,353
Batangas	228	132	360
Bukidnon	189	166	345
Bulacan	880	469	1,349
Cagayan	480	240	720
Camarines Sur	30	22	52
Ilocos Sur	175	80	255
Iloilo	1,023	503	1,526
Laguna	3,886	2,325	6,211
La Union	2,034	1,360	3,394
Masbate	2,784	532	3,316
Mindoro	470	261	731
Pampanga	1,025	185	1,210
Rizal	1,593	895	2,488
Romblon	158	56	214
Samar	71	46	117
Surigao	1,409	1,041	2,450
Tarlac	769	235	1,004
Tayabas	4,918	3,194	8,112
Total	24,640	13,190	37,830

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay	383	329	175	887
Batangas	4,897	2,980	478	8,355
Bulacan	2,683	1,820	1,363	5,866
Bukidnon	123			123
Camarines Sur	625	141	3	769
Catanduanes	7	6		13
City of Baguio	17	17	17	51
Iloilo	2,038	982	357	3,377
Laguna	7,921	4,732	2,066	14,719
La Union	267	242	244	753
Mountain Province	117	111	111	339
Nueva Ecija	741	523	287	1,551
Pampanga	2,750	1,767	864	5,381
Pangasinan	2,429	1,990	1,311	5,730
Rizal	1,811	672	92	2,575
Romblon	185	46		181
Samar	522	23		545
Sorsogon	115			115
Tarlac	1,016	415	28	1,459
Zambales	30	30	30	90
Total	28,627	16,826	7,426	52,879

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	14	14		28
Agusan.....	10,027	3,152		13,179
Antique.....	390			390
Bataan.....	5,627	3,332		8,959
Batanes.....	2,042	1,835	1,211	5,088
Batangas.....	4,115	2,553		6,668
Bohol.....	4,599	3,504		8,103
Bukidnon.....	76	54		130
Bulacan.....	1,352	646		1,998
Cagayan.....	8,927	3,991		12,918
Camarines Norte.....	8,161	5,780		13,941
Camarines Sur.....	4,132	1,913		6,045
Capiz.....	834	387		1,221
Cavite.....	67,467	66,014		133,481
Cebu.....	32,242	9,946		42,188
Cotabato.....	839	9		848
Davao.....	4,340	2,519		6,859
Ilocos Norte.....	4,646	3,763		8,409
Ilocos Sur.....	4,346	3,760		8,106
Iloilo.....	17,773	9,621		27,394
Isabela.....	183	130		313
Laguna.....	991	666		1,657
Lanao.....	7,783	4,431		12,214
La Union.....	5,027	4,208		9,235
Leyte.....	16,996	4,830		21,826
Marinduque.....	3,060	1,015		4,075
Masbate.....	2,285	1,090		3,375
Mindoro.....	1,244	401		1,645
Misamis.....	11,517	3,437		14,954
Mountain Province.....	372			372
Nueva Ecija.....	13,650	6,194		19,844
Nueva Vizcaya.....	5,868	4,773		10,641
Occidental Negros.....	73,477	39,679		113,056
Oriental Negros.....	5,177	2,951		8,128
Palawan.....	216	135		351
Pampanga.....	67,540	25,380		92,920
Pangasinan.....	6,067	4,443		10,510
Rizal.....	35,153	18,804		53,957
Romblon.....	96	17		113
Samar.....	8,678	3,727		12,405
Surigao.....	1,821	1,214		3,035
Tarlac.....	5,604	1,219		6,823
Tayabas.....	28,091	13,997		42,088
Zambales.....	10,899	10,290		21,189
Zamboanga.....	8,062	1,997		10,059
<b>Total.....</b>	<b>501,806</b>	<b>277,721</b>	<b>1,211</b>	<b>780,738</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF NOVEMBER, 1927**

(No case and no death reported during the month.)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF NOVEMBER, 1927**

(No case and no death reported during the month.)

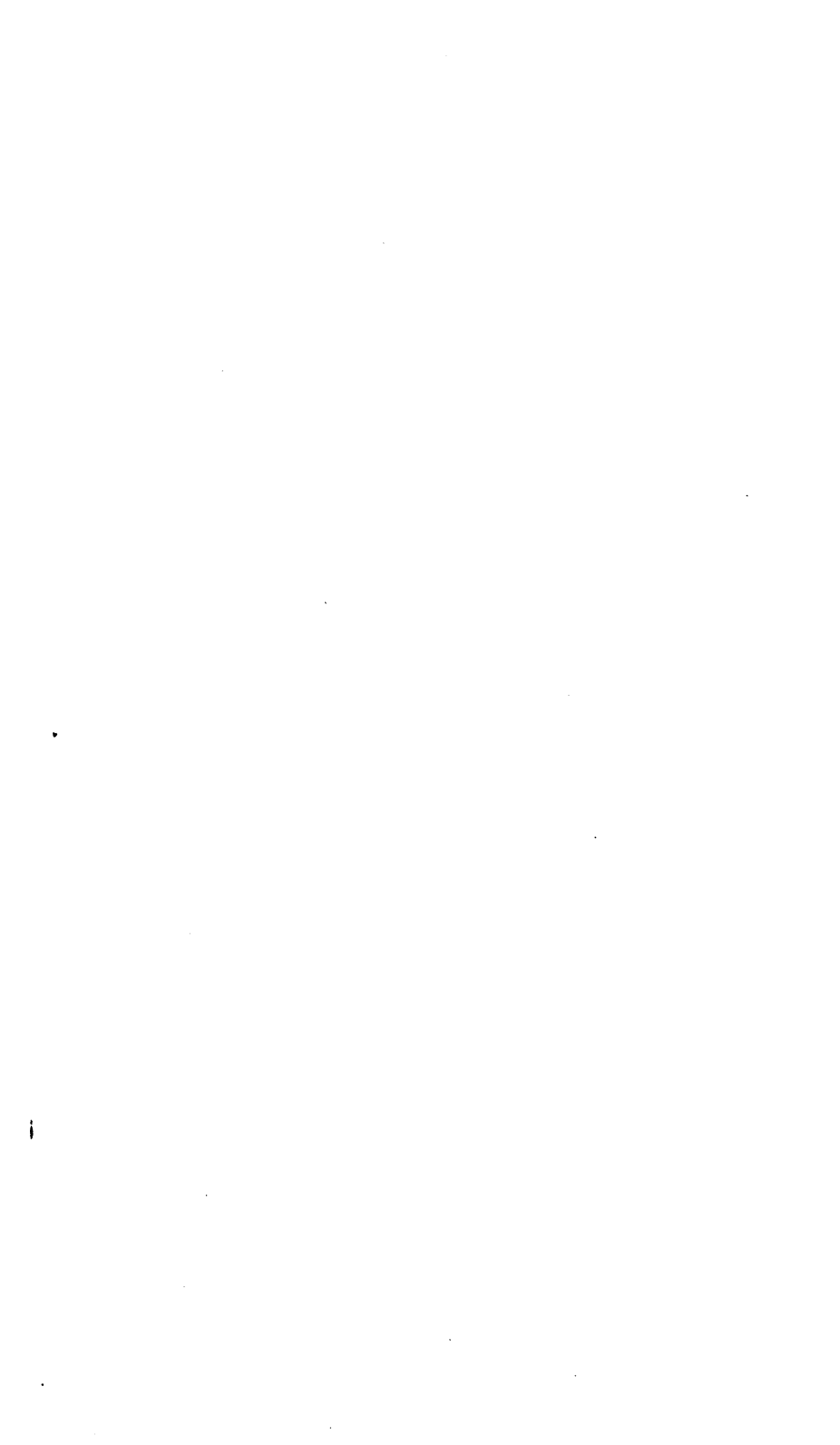
**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF NOVEMBER, 1927**

Sanitary orders	Health districts			
	No. 1 Meisic	No. 2 Sampa- loc	No. 3 Paco	Total
<b>Orders pending, November 1, 1927:</b>				
Minor.....	147	139	84	370
Sewer.....	27	52		79
Vacating.....	8	11		19
Filling.....	23	36	21	80
<b>Total.....</b>	<b>205</b>	<b>238</b>	<b>105</b>	<b>548</b>
<b>Orders issued during the month:</b>				
Minor.....	5	8	7	20
Sewer.....				
Vacating.....				
Filling.....	1			1
<b>Total.....</b>	<b>6</b>	<b>8</b>	<b>7</b>	<b>21</b>
<b>Orders completed during the month:</b>				
Minor.....	8	9	10	27
Sewer.....				
Vacating.....				
Filling.....				
<b>Total.....</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>27</b>
<b>Orders cancelled during the month:</b>				
Minor.....	28			28
Sewer.....				
Vacating.....				
Filling.....				
<b>Total.....</b>	<b>28</b>			<b>28</b>
<b>Orders pending, November 30, 1927:</b>				
Minor.....	116	138	81	335
Sewer.....	27	52		79
Vacating.....	8	11		19
Filling.....	24	36	21	81
<b>Total.....</b>	<b>175</b>	<b>237</b>	<b>102</b>	<b>514</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	29	46	24	99
<b>Permits for minor building constructions:</b>				
Approved.....	35	44	23	102
Disapproved.....	4	5	2	11
<b>New buildings completed.....</b>	<b>17</b>	<b>21</b>	<b>13</b>	<b>51</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	2	23	14	39
Disapproved.....		4	7	11
<b>Prosecutions:</b>				
Convictions.....				
Dismissals.....				
Amount of fines.....				
<b>Plumbing permits issued.....</b>	<b>32</b>	<b>72</b>	<b>44</b>	<b>148</b>
<b>Plumbing projects completed.....</b>	<b>28</b>	<b>57</b>	<b>33</b>	<b>118</b>
<b>Premises connected to the sanitary sewer to October 31, 1927.....</b>	<b>2,530</b>	<b>4,345</b>	<b>742</b>	<b>7,617</b>
<b>Connected during the month.....</b>	<b>2</b>	<b>8</b>	<b>6</b>	<b>16</b>
<b>Total.....</b>	<b>2,532</b>	<b>4,353</b>	<b>748</b>	<b>7,633</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

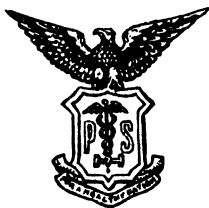
VOL. VII

DECEMBER, 1927

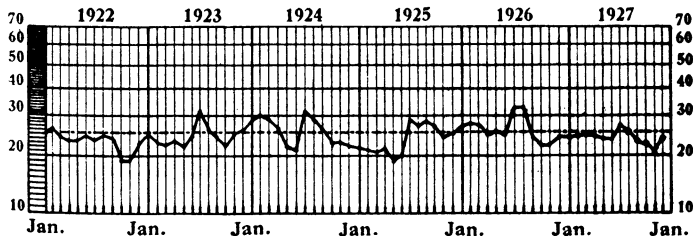
No. 12

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



..... Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
 LEONCIO LOPEZ-RIZAL, M.D., *Member*  
 EUSEBIO D. AGUILAR, M.D., *Member*  
 TEOFILO CORPUS, M.D., *Member*  
 REGINO G. PADUA, M.D., *Member and Secretary*

## TABLE OF CONTENTS

	Page
Report of a Case of Bronchopneumonia Without Cough Secondary to Influenza, by Dr. JUAN BELISARIO.....	687
Purificación del Agua, por el Dr. EUGENIO HERNANDO.....	691
Importancia de la Estandarización de las Diferentes Clases de Negocios de Una Ciudad Bajo el Punto de Vista Sanitario, por el Dr. M. SANTOS .....	701
Medios Contra el Contagio Tuberculoso en los Niños, por el Dr. JOSÉ A. VIDAL .....	712
Comparative Efficiency of Carbon Tetrachloride, Chenopodium, and Thymol, by Dr. CRISTOBAL .....	721
Remarks on the Etiology and Pathology of Leprosy, by Dr. H. W. WADE .....	223
Notes on Pasis Green as Larvicide, by C. MANALANG.....	725
Miscellaneous .....	728
General Statistics .....	733

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VII

DECEMBER, 1927

No. 12

REPORT OF A CASE OF BRONCHOPNEUMONIA WITHOUT  
COUGH SECONDARY TO INFLUENZA

By Dr. JUAN BELISARIO

*Resident Physician, Davao Public Hospital*

I. J., female, Filipino, single, 20 years old, born and living in the town of Davao, Davao, was taken ill on the eve of her marriage, February 5, 1926, with the chief complaints of fever and headache.

*Family history.*—Very strong for pulmonary tuberculosis. The grandmother with whom the patient lived while a small girl, died about eight years ago of pulmonary tuberculosis. The father is still living, but clinically and bacteriologically positive for pulmonary tuberculosis. The mother is also still living, but demented.

*Menstrual history.*—Her menses started at the age of fourteen, of the 4-day type, and has been regularly appearing every 28 days since it first appeared. Patient claims that there is absolutely no trouble with her menstruation.

*Previous diseases.*—She had measles and chicken-pox while a small girl, and at the age of ten, she had yaws, which became well without treatment. There are white patches on the skin of the left hand, however, as a result of this disease. About eight months ago, she had a mild attack of acute cholecystitis, lasting for about three weeks, and was successfully treated by her physician. It had never recurred, since then. About four months ago, she was treated by her dentist for pyorrhea al-

veolaris. While undergoing treatment, by her dentist, she vomited blood. According to her, the blood was fresh, scanty in amount, and was mixed with her saliva. Since then, she had never vomited blood again.

*Present illness.*—It started on February 5, 1926, as fever and headache. But previous to this day, or on the 4th, while the weather was cool and windy, she took a bath with warm water in an almost open bathroom, and in the night of that day, she had malaise. The next afternoon, or on the 5th, she had the fever and headache, for which, she took two tablets of Bayer's Cafiaspirina. The next morning, she was not yet feeling well, so she took a dose of magnesium sulphate, and in the afternoon, her physician was called. When seen by her physician, she had a temperature of  $38.2^{\circ}\text{C}$ ., with severe continuous headache all over the head and slight catarrh but no cough. At the same time, she also complained of pain all over the body, especially in the bones and joints, slight backache, especially at the right side, and including the chest, and slight epigastric pain. On examination, the face was flushed, the pulse slightly accelerated, but the heart and lungs were negative. The abdomen and the extremities were also negative. She was diagnosed as case of influenza and was treated as such.

The next morning found her feeling entirely well, the fever, the headache, and all other symptoms had entirely disappeared. So she left her bed and entertained many visitors who were congratulating her. However, in the afternoon, the fever returned, the headache became more severe, and the backache more pronounced. At this time the patient also complained of dull pain all over the right upper extremity. She was forced again to go to bed and at this time her temperature reached  $39.2^{\circ}\text{C}$ . The abdomen became tympanitic, and she was restless. At about midnight, she had vomiting, and in the vomitus, streaks of fresh blood were seen, so her physician was again called. When seen, the respiration was 20 per minute, but not embarrassed. The pulse rapid, 110 per minute and the patient was sweating rather profusely. On examination, the abnormal findings were only in the lungs. At the right interscapular area, the tactile fremitus was increased and there was a distinct impairment of resonance. And at the level of the scapular spine at the interscapular region, fine crepitant rales could be heard. The rest of the lungs, and the heart were negative.

Now the patient was diagnosed as bronchopneumonia secondary to influenza, and was treated as such. From the day the



patient felt sick until this day, she had never coughed nor hawked.

On February 8th, or on the fourth day of her sickness, the fever was still very high, the headache all over the head severe, and the backache undiminished. However, she no longer complained of the epigastric pain and the pain at the right upper extremity.

In the night of this day, the fever rose to  $40.3^{\circ}$  C., and the patient became restless, and she looked so very ill that the family requested that another physician be called for consultation. The attending physicians agreed, so a third physician was called.

The patient was examined, the results of which are as follows:

Patient restless, face flushed and slightly anxious, the temperature  $40.3^{\circ}$  C.

Respiration, accelerated, 36 per minute, but not labored.

Pulse strong, full bounding, and rapid, about 118 per minute.

The heart beats were strong and rapid, otherwise normal.

Lungs. Increased tactile fremitus at the right, from the apex down to the level of the scapular spine. On percussion, there is slight impairment of resonance over the same area. And on auscultation, fine crepitant rales can be heard, now from the right apex, down to the level of the scapular spine, and at the right interscapular region.

Until then the patient has not yet coughed. The physician attending her had stayed near the bed of the patient for hours waiting for a cough but was sorely disappointed. Those attending her also said that they had never heard her cough at all.

The above diagnosis was agreed upon by the physicians and in addition, the following were considered on account of the very strong family history of pulmonary tuberculosis: pneumonic type of tuberculosis, galloping type of tuberculosis, and tuberculous meningitis.

Now to eliminate these, the sputum was asked to be saved for examination, and the sputum of the whole night was sent to the laboratory of the Davao Public Hospital. The sputum contained nothing but clear saliva. When examined by concentration method of antiformin, it was found to be negative for tubercle bacillus. However, the above possibilities were kept in mind, but she was continued to be treated as bronchopneumonia. No other laboratory examinations were made.

On the next day, or on the fifth day of her sickness, the fever suddenly dropped to  $36.4^{\circ}$  C., the headache and all other symptoms, except the backache, entirely disappeared. The back-

ache was also very much diminished. When the lungs were again examined, there were found large mucous rales at the right interscapular region.

There was no cough yet until this time.

Since then, the fever did not return, and the patient slowly recovered. Every other day the lungs were examined, and on the 12th day of the sickness only occasional fine crepitant rales could be heard at the right interscapular area. On the 16th day of the sickness, the lungs were almost entirely clear. At the time this article was submitted, the patient was already sitting on a chair, but was not yet allowed to walk.

## PURIFICACIÓN DEL AGUA

Por el Dr. EUGENIO HERNANDO

*Jefe, División de Sanitación Metropolitana*

*Servicio de Sanidad de Filipinas*

### [Resumen]

*Consideraciones generales.*—De todos los servicios públicos sanitarios el más importante es el suministro de agua pura y potable para beber y usos domésticos. Si las comunidades cuentan con un buen suministro de agua hasta la mortalidad infantil decrece. La mortalidad por fiebre tifoidea es la que sirve de índice para juzgar de la pureza de un suministro de agua.

*Clasificación de las aguas.*—Por su naturaleza, Rosenau las clasifica en buenas, poluctas e infectadas. Por su localización, en aguas de lluvia, superficiales y profundas. El agua de lluvia se recoge en aljibes o tanques; el agua superficial la constituyen la de los ríos, arroyos y largos; y el agua profunda procede de los pozos y manantiales.

*Propiedades generales.*—El agua de lluvia es buena para beber si se recoge debidamente. Los aljibes mal protegidos son un buen criadero de mosquitos, especialmente los que transmiten el dengue (*ædes* o *stegomya calopus*). El agua superficial siempre debe considerarse, sino infectada al menos polucta. Las aguas profundas pueden considerarse como seguras excepto cuando el subsuelo que atraviesan es de piedra caliza. Las aguas profundas son las obtenidas por medio de pozos ya superficiales, profundos o artesianos. Los manantiales gozan de las propiedades generales de las aguas superficiales y profundas.

*Clasificación de pozos.*—(a) *Superficiales*, de 5 a 75 pies de profundidad. (b) *Perforados*, los que se obtienen introduciendo un tubo en el suelo que atraviase una capa de arena, tierra u otro suelo blando a cierta profundidad. (c) *Profundos*, cuando los tubos son introducidos a más de 100 pies de profundidad sin pasar una capa impermeable. (d) *Artesianos*, cuando pasan una zona impermeable y después otra permeable.

*Análisis sanitario del agua.*—El análisis sanitario del agua comprende: (a) análisis físico, (b) análisis microscópico, (c)

análisis químico, (d) análisis bacteriológico, (e) examen sanitario (*sanitary survey*), (f) resultados clínicos.

*Recogida de muestras.*—Dos litros de agua son suficientes para el examen físico, químico, microscópico y biológico. Para hacer el examen bacteriológico exclusivamente 100 centímetros cúbicos de agua son suficientes. Las botellas donde se recoge las muestras de agua deben estar perfectamente esterilizadas y con tapón de cristal siempre que sea posible. El agua debe recogerse de tal manera que no moje las paredes exteriores ni la boca de la botella y debe remitirse al laboratorio sin que el agua moje el tapón, ya sea tapón de cristal, corcho o algodón.

*Tiempo.*—Para el *examen químico*, las muestras deben examinarse no después de 72 horas después de obtenidas, para aguas profundas; 48 horas para aguas superficiales regularmente puras; 12 horas, para aguas superficiales poluctas; y 6 horas, para producto de la alcantarilla tratada o sin tratar. Para el *examen microscópico*, el agua debe examinarse no después de 72 horas, para aguas profundas; 24 horas, para aguas superficiales regularmente puras; e inmediatamente para aguas que contengan organismos frágiles. Para el *examen biológico*, no después de cuatro horas. El *examen físico* consiste en determinar el olor, color, sabor y turbieza del agua. El agua de beber debe ser clara y transparente, inodora e insípida.

*Análisis químico.*—Es muy importante, complementa el examen biológico y consiste en determinar: (a) dureza; (b) sólidos (*fixed residues*); (c) sustancia orgánica; (d) cloruros; (e) sustancias minerales especiales.

(a) *Dureza.*—El agua dura no es satisfactoria y daña la piel. La dureza se mide por grados. En los Estados Unidos se considera agua blanda de 0° a 150°, dura de 150° hasta 575° que es el límite máximo permitido. Las aguas profundas son más duras que las superficiales, especialmente en Filipinas.

(b) *Sólidos.*—Es el residuo fijo que queda en las aguas después de eliminar las sustancias que llevan en suspensión y en disolución. En los Estados Unidos, el límite permisible de sólidos es de 1,000 partes por millón. Las aguas de Filipinas tienen normalmente una proporción mayor sin daño para la salud.

(c) *Sustancia orgánica.*—Son de procedencia animal o vegetal y se la encuentra en suspensión o solución; consiste en amoníaco libre, amoníaco albuminoideo, nitritos y nitratos.

*Amoníaco libre.*—Su presencia en las aguas significa la existencia de sustancia orgánica en putrefacción. La presencia de amonía libre en los depósitos de agua tiene significación.

El agua de pozos profundos puede tener gran cantidad de amoníaco libre. También se forma en el proceso de desintrificación. La cantidad permisible es de 0.015 a 0.055 partes por millón.

*Amoníaco albuminoideo*.—Su presencia indica polución del agua por el alcantarillado, animales muertos, estiércol, etc. Sirve de alimento a las bacterias. La sustancia vegetal produce menos cantidad de amoníaco albuminoideo que la animal. El límite permisible es de 0.079 a 0.34 partes por millón.

*Nitritos*.—La presencia de nitritos en el agua, es la señal de peligro para el oficial sanitario. Indica un proceso activo de putrefacción debido a la vida bacteriana. Indica polución orgánica. Su presencia en el agua, aunque sea en cantidades muy pequeñas, es suficiente motivo en la mayor parte de las veces para condenar, *a priori* un agua, ya sea para beber o usos culinarios. Su presencia en agua de manantiales o pozos profundos es menos significativa.

*Nitratos*.—Se forman en el último proceso de mineralización de la sustancia orgánica. Su presencia en el agua indica una polución pasada o remota. Es una llamada al oficial sanitario para buscar el origen de la polución. El límite permitido es de 0.3 a 1.6 parte por millón.

(d) *Cloruros*.—Se presentan generalmente en forma de cloruro de sodio. Puede indicar polución procedente de las cuerdas, alcantarilla, orina. Su cantidad varía en cada localidad. Las aguas de Manila son ricas en cloruros por su proximidad al mar. Límites permisibles de 3.00 a 10.00 partes por millón.

(e) *Sustancias minerales especiales*.—El *yerro* es indicio de la presencia de hongos. Su importancia es más industrial que sanitaria. El *plomo* no debe existir ni aun en pequeñas cantidades, produce saturnismo. La falta de *yodo* produce el bocio simple.

*Examen microscópico*.—Sirve para determinar la presencia de microorganismos no patógenos que son los que suelen dar olor y sabor desagradable al agua. Comprende los *fungos*, *protozoas*, *algas*, *zotíferos*, *diátomos*, etc. Whipple dice que las bacterias hacen al agua insegura y los microorganismos la hacen imbebible.

*Examen bacteriológico*.—Comprende (a) el recuento bacteriano, (b) prueba de presunción y (c) presencia de *B. coli*.

(a) *Recuento bacteriano*.—El número de bacterias corresponde a la cantidad de polución. El límite en los Estados Unidos es de no más de 100 bacterias por centímetro cúbico. En Filipinas, se ha fijado en 500 por centímetro cúbico.

*Prueba de presunción.*—Consiste en la producción de un 10 por 100 de gas en caldo lactosado, incubado a 37° C. por 24 a 48 horas. La prueba de presunción debe ser negativa.

(c) *Presencia de B. coli.*—Debe diferenciarse por el laboratorio si es fecal o no fecal y confirmarse su presencia. Desde el punto de vista sanitario el *B. coli* no debe encontrarse en el agua.

*Examen sanitario o "sanitary survey."*—Debe determinar la clase de suelo y subsuelo que recorre el suministro de agua; sus facilidades de polución, alrededores, presencia de alcantari-lado, población, etc.

*Resultados clínicos.*—Deberá estudiarse el índice de la fiebre tifoidea, cólera y disentería en la localidad. Constitución endémica de estas enfermedades y de otras llamadas originarias por el agua (*water-born diseases*).

*Sumario.*—Los resultados arrojados por los exámenes completos que dejamos indicados decidirá la cuestión de si un suministro de agua debe condenarse temporal o permanentemente.

*Interpretación del resultado del examen del agua.*—La siguiente tabla demuestra varios exámenes de muestras de agua de diferentes orígenes.

*Interpretación de los resultados.*—El análisis No. 1, por su resultado, indica una intensa polución del agua acusada tanto por el examen químico como el bacteriológico. Tal agua debe ser condenada no importa cuál sea su origen.

El análisis No. 2 corresponde a un agua superficial, almacenada en un depósito donde ha sufrido 30 días de sedimentación antes de usurla el consumidor. El depósito estaba regularmente protegido. El análisis químico demuestra ligera polución orgánica. La cantidad de amoníaco libre y albuminoideo es moderada, no hay nitritos, pocos nitratos; cloruros normal, recuento bacteriano y *B. coli* negativo. La prueba de presunción positiva es debida a la ligera polución del agua. El agua es segura para beber.

El análisis No. 3 corresponde al agua de un pozo perforado localizado a unos 400 pies de una cuadra; 200 pies de un pozo negro; y 250 pies de una casa. El examen demuestra exceso de cloruros; la cantidad de amoníaco libre y albuminoideo es moderada; los nitritos y nitratos están en exceso; el examen bacteriológico es satisfactorio. La cantidad de cloruros se demostró que era la usual en la localidad. La presencia de nitritos y exceso de nitratos indica que el suelo está sobrecargado de materia orgánica; pero como el examen bacteriológico es bueno el agua de tal pozo puede certificarse como segura. Ahora bien,

TABLA DEMOSTRANDO EL RESULTADO DEL EXAMEN QUÍMICO Y BIOLÓGICO DE VARIAS MUESTRAS DE AGUA

Substancias	Límites permitidos	Análisis—					
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Amonia libre .....	0.015-0.055	0.214	0.010	0.018	0.022	0.006	1.050
Amoniaco aluminóideo .....	0.079-0.34	0.810	0.114	0.020	0.035	0.011	0.175
Nitritos .....	Nada .....	0.005	0.000	0.007	0.007	trazas .....	trazas fuertes.
Nitratos .....	0.3-1.6	21.000	0.020	1.500	1.000	20.000	0.000
Cloruros .....	3-10	47.000	2.700	19.300	19.000	89.000	2.000
Sólidos .....	300-1000	133.000	17.000	69.000	205.000	317.000	20.000
Bacterias por centimetro cúbico .....	100-500	120.000	7.7	4.5	2.75	1.6	6.25
Prueba de presunción .....	Negativo ..	cu. 0.001 c.c.+	Positivo ..	Negativo ..	cu. 0.1 c.c.+	Negativo ..	Negativo ..
<i>Bacillus coli</i> .....	Idem .....	cu. 0.01+	Negativo ..	Idem .....	cu. 0.1 c.c.+	Idem .....	Idem .....

tal pozo debe ponerse bajo vigilancia puesto que por su localización es muy susceptible de infección.

El análisis No. 4 corresponde al agua extraída de un pozo superficial de 23 pies de profundidad en el cual la profundidad del agua es de cuatro pies. El examen local demostró que a unos 60 pies del pozo existía un “pusalian” que servía al mismo tiempo de retrete. La bomba del pozo era muy defectuosa y la plataforma estaba agrietada. El examen demuestra que la cantidad de amoníaco libre y albuminoideo es normal, los nitratos y nitritos están en exceso, los cloruros son también excesivos. El examen bacteriológico es desfavorable. El agua de este pozo no es propia ni para beber ni para usos domésticos, pero una vez arreglados los defectos del pozo y desinfectándole tal vez pudiese dar agua segura.

El análisis No. 5 corresponde al agua de un pozo superficial de 25 pies de profundidad y 4 pies de profundidad del agua. El pozo está bien protegido. Dos pozos negros fueron localizados a unos dos “blocks” del suministro del agua. El análisis demuestra exceso de cloruros y nitratos, lo cual indica una polución remota o a distancia; pero como el examen biológico es bueno, puede permitirse el uso de tal pozo, aunque el oficial sanitario debe cambiar la localización de los pozos negros para corregir la polución remota.

El análisis No. 6 corresponde a una muestra de agua de lluvia obtenida de un aljibe. El agua era clara y transparente. El resultado bacteriológico indica ausencia de polución fecal, pero presencia de polución orgánica; por lo tanto, el aljibe debe limpiarse tan pronto como se pueda. Mientras tanto el agua puede usarse aunque como agua de beber.

#### PURIFICACIÓN DEL AGUA

Consiste en separar del agua las impurezas que por una u otra causa son perjudiciales para la salud. Estas impurezas son: (a) en suspensión y (b) en solución.

*Impurezas en suspensión.*—Éstas son: (1) arena, hojas, ramas, cal, etc.; (2) micro-organismos; (3) bacterias.

*Impurezas en solución.*—Sales.

*Métodos de purificación.*—Éstos son: (a) naturales; (b) artificiales o mecánicos; (c) químicos. Estos métodos se usan separadamente o en combinación según la cantidad de agua que se trate de purificar.

*Métodos naturales.*—Consisten principalmente en los siguientes: (a) oxidación; (b) dilución; (c) sedimentación; (d) acción físico-química del suelo y del sol.



La *oxidación* consiste en la purificación natural del agua por el oxígeno de la atmósfera favorecida por un gran movimiento de la masa de agua a purificar. La *dilución* consiste en mezclar el agua a purificar con otra gran masa de agua pura. Necesita estar acompañada de una gran oxidación y tiempo. La *sedimentación* consiste en dejar en reposo el agua para que precipite y decante todas las sustancias en suspensión que contenga, cuyas sustancias al precipitarse arrastran también consigo al fondo hasta las bacterias. Para purificar el agua por este procedimiento, es necesario un período de tiempo de no menos de 15 días. La acción físico-química y del sol también purifican naturalmente las aguas.

Todos estos procedimientos son naturales, aunque la oxidación y sedimentación pueden también obtenerse mecánicamente.

*Métodos artificiales o mecánicos.*—Consisten en: (a) destilación; (b) ebullición; (c) oxidación; (d) sedimentación; (e) filtración; (f) cloronización.

(a) *Destilación.*—El agua puede purificarse destilándola. Es un procedimiento costoso y no práctico.

(b) *Ebullición.*—Hirviendo el agua se la purifica, pero se la hace poco agradable al paladar así como se la priva de muchos gases y sales en disolución que contiene. El procedimiento es aplicable solamente para pequeñas cantidades de agua y para devolverla los gases y sales que ha perdido así como el sabor agradable, el Doctor Houston de Inglaterra recomienda el siguiente procedimiento: Hiérvase las dos terceras partes del agua que se desee purificar y tan pronto como ha comenzado a hervir, retírese del fuego y añádase la tercera parte restante sin someterla a tratamiento alguno. Al enfriarse la mezcla, el agua es pura, y bebible.

(c) *Oxidación.*—Por medio de aparatos especiales el agua a purificar se la somete a un rápido movimiento de surtidor para oxidarla. Es un procedimiento que se usa como preparatorio en los grandes suministros de agua para someterla a ulteriores operaciones de purificación.

(d) *Sedimentación.*—Consiste en dejar el agua en reposo al menos por 15 días para que precipite todas las impurezas que contenga. En los grandes suministros de agua es una operación previa a la filtración y se acelera usando el sulfato de alúmina o de hierro. En este caso, dos o tres horas son suficientes para obtener la precipitación de todas las impurezas.

Cuando el agua es turbia puede purificarse en casa añadiéndola alumbre en polvo que hará precipitar todas las impurezas.

La cantidad de alumbre que debe usarse es la suficiente para clasificar el agua. El agua así tratada necesita el uso de la tintura de yodo o del hipoclorito de cal para poderla beber.

(e) *Filtración*.—Consiste el procedimiento en filtrar el agua a través de capas de arena, grava y carbón. Hay que considerar el caso de que se trate de filtrar grandes cantidades o pequeñas cantidades de agua. En el caso de pequeñas cantidades de agua el filtro Berkefel es bueno, pero el agua debe clasificarse antes de filtrarla y el filtro debe limpiarse muy bien y con las manos limpias, de lo contrario el que limpia el filtro podría infectarle y como consecuencia el agua.

Un *filtro casero* puede construirse de la manera siguiente: Cójase un barril de madera y píntese el interior con asfalto para hacerle impermeable o úsese una vasija grande de barro petrificado. Póngase en el fondo una capa de piedra picada hasta que rebase la parte superior del orificio del grifo. Sobre esta capa póngase otra de 8 centímetros de espesor de carbón picado; sobre ésta, otra de tres centímetros de espesor de arena gruesa; sobre ésta, otra capa de 10 centímetros de espesor de arena fina; sobre ésta, otra capa de 5 centímetros de espesor de piedra partida; y sobre ésta, una baldosa. Todo este material debe ser hervido separadamente durante 30 minutos. El agua a tratar se pone en un depósito colocado a una altura de medio a un metro sobre el filtro y el agua debe hacerse que caiga sobre la baldosa y se desparrame sobre el filtro. El material del filtro debe lavarse y esterilizarse por la ebullición al menos cada mes. Las grandes plantas de filtración de las urbes populosas consisten en grandes filtros que abarcan cientos de metros cuadrados. Hay dos tipos de estas plantas, a saber: las plantas de filtros lentos y la de filtros rápidos.

Los filtros lentos pueden filtrar de 3,000,000 a 6,000,000 de galones al día por acre de superficie, los filtros rápidos filtran de 120,000,000 a 125,000,000 de galones por día por acre de superficie.

La filtración es tan perfecta que en muestras de agua que contenían antes del proceso de filtración más de 100,000 bacterias por centímetro cúbico se redujo a 50 solamente después de filtradas.

(f) *Cloronización*.—La cloronización mecánica del agua para purificarla se hace por medio de aparatos mecánicos especiales que operan automáticamente.

*Procedimientos químicos*.—Consiste en el uso de sustancias químicas para purificar el agua. Las más usadas son tintura

de yodo, hipoclorito de cal, permanganato potásico, sulfato de cobre y también vamos a incluir aunque no propiamente el ozono y los rayos ultravioleta.

Por regla general, las sustancias químicas se usan como medios auxiliares de purificación de grandes cantidades de agua o para purificar medianas o pequeñas cantidades de agua.

*Tintura de yodo.*—Para purificar un agua clara añádanse dos o tres gotas de tintura de yodo por cada litro de agua, 6 gotas si el agua está turbia o tiene sedimentos. Dejar pasar 15 minutos antes de beberla y entonces para quitar el color moreno que resulta, disuélvase un cristalito (de 0.001 a 0.01 gm.) de trisulfito de sosa.

*Hipoclorito de cal.*—Es el más usado para purificar cualquier cantidad mediana de agua. El hipoclorito de cal para ser útil tiene que contener no menos de 30 por ciento de cloro libre. Basta la presencia de una proporción de 0.1 a 0.5 de cloro libre para considerar un agua libre de micro-organismos. Si el agua es turbia se necesita más cantidad; pero de todos modos la proporción nunca debe pasar de 1 parte de cloro por 1,000,000 de partes de agua.

La proporción de cloro libre que se usa para purificar el suministro de agua de la Ciudad de Manila oscila de 1 parte por 1,500,000 a 1,800,000 de agua.

Para obtener una proporción de 1 parte de cloro por 1,000,000 de galones de agua, se necesitan 25 libras de hipoclorito de cal al 30 por ciento de cloro libre. El agua clara y profunda sólo necesita de 0.1 a 0.3 de cloro libre o sea de 2.5 a 7.5 libras de hipoclorito de cal por un millón de galones de agua. El agua superficial necesita de 0.1 a 0.5 de cloro libre o sea 2.5 a 12.5 libras de hipoclorito por un millón de galones de agua.

El "modus operandi" es el siguiente: Se diluye la cantidad de hipoclorito de cal necesaria en una pequeña cantidad de agua para obtener una papilla. Se le añade 10 volúmenes más de agua y se deja decantar. El líquido claro que resulta se añade al agua a tratar diluyéndole perfectamente. Se lava dos o tres veces el sedimento y el agua del lavado se vierte en el agua a tratar. Agítese bien el agua, déjese en reposo y a los 30 minutos está lista para ser bebida.

Para determinar si el hipoclorito de cal añadido es suficiente para esterilizar el agua se usa el reactivo conocido por ortotolidina. La técnica es la siguiente. Póngase en un vaso 100 centímetros cúbicos del agua tratada, añádase 1 centímetro cúbico del reactivo y aparecerá un color que varía del amarillo

pálido al rojo-naranja. El amarillo pálido o limón es el justo pues más pronunciado indicaría exceso de cloro. Para neutralizar este exceso basta añadir al agua tratada cristales de trisulfato de sosa hasta obtener el color debido.

*Uso del saco de Lister.*—La capacidad de este saco es de 30 galones. Tómese, si el agua es clara y superficial, de tres a cinco centígramos de hipoclorito de cal, añádase una cucharadita de agua y fórmese una papilla en un vaso; llévase este vaso de agua y déjese decantar. El líquido claro viértase en el saco y agítese al agua con un palo. Déjese el palo en el saco, lávese el sedimento dos o tres veces y el agua de lavado viértase en el agua. Extraíga-se un vaso de agua otra vez en el saco pues así se desinfectarían los grifos. Agítese cuatro o cinco veces el agua del saco y retírese el palo que sirvió para moverla. Cúbrase el saco y déjese pasar 30 minutos. Al cabo de ese tiempo hágase la reacción de la ortotolidina y véase si hay o no exceso de cloro. De haberlo neutralícese por el trisulfito de sosa. Después de hecho esto el agua está lista para ser bebida.

*Permanganato potásico.*—Se usa poco porque el agua purificada por esta sustancia resulta repulsiva por el olor y sabor. La cantidad que se necesita es variable según sea el agua clara o turbia. Basta obtener un color violeta muy claro y dejar pasar 15 minutos para considerarla purificada el agua.

*Sulfato de cobre.*—Más bien se usa para destruir la algas y hongos del agua y así quitarle el olor y sabor desagradable, que para esterelizar el agua.

*Ozono y rayos ultravioleta.*—El procedimiento es tan enojoso y costoso que ha caído en desuso.

*Desinfección de pozos.*—Se necesita emplear una libra de hipoclorito de cal por cada 25,000 galones de agua. Un procedimiento rápido de desinfección es el siguiente: Mézclese una cucharadita de café de hipoclorito de cal nuevo con una cucharadita de agua. Fórmese una papilla y dilúyase en un vaso de agua. Decántese y añádase el líquido claro resultante a un balde lleno de agua. Este balde lleno de la dilución así preparada servirá para desinfectar pozos que tengan las siguientes dimensiones: 4 pies de diámetro y 86 pies de profundidad del agua, 5 pies de diámetro y 53 pies de profundidad del agua y 6 pies de diámetro y 37 pies de profundidad del agua.

## IMPORTANCIA DE LA ESTANDARIZACIÓN DE LAS DIFERENTES CLASES DE NEGOCIOS DE UNA CIUDAD BAJO EL PUNTO DE VISTA SANITARIO

Por el Dr. M. SANTOS

Uno de los problemas de cuya solución se propone a realizar si se considera su importancia transcendental para con la unidad colectiva en su aspecto sanitario, es la ejemplarización de los negocios a base de alimentos, factor importante y esencial para la salud pública, y de cuyo carácter utilitario se establecerá su equilibrio.

Varios son los negocios ya establecidos, pero por su calidad merecen cada uno de ellos una definición y prescripción diferentes.

En la inmensa mayoría de las edificaciones que se verifican en una ciudad todas son residenciales y en muy escaso número son las comerciales, por cuyo motivo no es posible responder del todo a las exigencias prescritas con arreglo a cada negocio, en especial al de los alimentos que merecen preferente atención.

Los negocios sobre alimentos deberán establecerse en edificios de no menos de 3 metros de altura provistos de suficiente ventilación y luz y que no estén dotados de una acomodación de vivienda si es posible, y en caso contrario, que esté completamente separada, provista de cocina, retrete y baño conectados al alcantarillado con pavimento de cemento y servicio de aguas, y que las habitaciones tengan una area de dos por tres metros por persona; y que los dependientes de los mismos no estén afectados ni que hayan tenido contacto con alguna persona que padezca de enfermedad contagiosa e infecciosa. Asimismo deben estar provistos de un certificado de vacuna antitífica, anticolérica y antivariolosa reciente y una muestra de sus excrementos para ser analizado en la Oficina de Ciencias.

### TIENDA DE "SARISARI"

"*Sarisari*."—Son unos establecimientos considerados como pequeños *groceries*, en los cuales se pueden vender al por menor pero no servir productos alimenticios, bebidas y otros artículos.

Éstos deben situarse en edificios provistos de puerta o puertas independientes y no en zaguanes, con pavimento de cemento, servicio de aguas, cocina, fregadero, latas de basura, retrete con

tela metálica a prueba de moscas y con puertas automáticas conectadas al alcantarillado en los sitios donde éste existe, y en caso contrario, en los tanques sépticos que se construirán al efecto.

Deben tener un mostrador con verjas de madera, armario o armarios de cristal en donde se colocarán los productos alimenticios cocidos provistos de pinzas para coger dichos artículos y no con la mano, papeles blancos y limpios para envoltorios de los mismos proscribiendo completamente el uso del papel periódico por ser sucio; palangana de agua, jabón y toallas suficientes para lavar las manos de los dependientes, trapos limpios para uso de la tienda.

El establecimiento debe ser pintado de blanco en el interior y exterior así como el mostrador y armario. El personal debe estar siempre con vestido limpio y con delantal también limpio, las uñas cortadas y siempre las manos limpias y provistos de certificados de buena salud o "health certificates" expedidos por un oficial sanitario que indiquen de que están desprovistos de enfermedades infecciosas y contagiosas y haber sido vacunados contra la tifoidea, cólera y viruela. Asimismo no se debe cuidar ninguna clase de animales dentro y fuera del establecimiento.

Siendo el "sarisari" un pequeño "grocery," debe haber una simetría y coordinación de los artículos que se expenden en él, para tener un buen aspecto ante el público, y para lo cual los productos alimenticios deben estar separados de entre otros productos. Las leñas que se expenden para uso de la cocina no deben ser colocadas dentro del mostrador sino detrás del establecimiento porque afean a la vista y encubren suciedades.

El vinagre debe ser puesto en frascos con tapones automáticos o esmerilados y no en tinajas que nunca se limpian y que se hallan siempre abiertas por abandono, y que en muchas ocasiones se ha visto insectos y animalitos casi ya macerados dentro de dichas tinajas.

Lo mismo sucede a la manteca que la colocan en receptáculos que en el lenguaje nativo se llaman "pasó" completamente abiertos, desprovistos de tapadera, expuestos al polvo, a las suciedades y a los insectos que mueren dentro de los mismos; esta debe ser colocada en un frasco de cristal blanco de boca ancha provisto de su correspondiente tapa.

El "patis," asimismo, será colocado en frascos de cristal blanco con tapón de cristal esmerilado.

Detrás del tabique de la tienda hacia el interior suelen ser ordinariamente depósitos de artículos para la venta, pero están colocados de tal manera que no es posible procedera la limpieza del local sin antes desalojarlos, convirtiéndose en madriguera de ratas que pudiera ser origen de serias y fatales consecuencias.

Y para corregir este estado anómalo, debe ser que todos los artículos estén colocados por encima de un tarima de madera de 30 centímetros de altura al suelo y de esta manera se hará muy accesible a la limpieza.

Los artículos que se permiten ser vendidos y no servidos en una tienda de "sarisari" son:

Dulces, "candies," chocolates en tabletas, pasteles, frutas, "putubungbong," "puto blanco," "tamales," "cuchintá," "bi-bingca," "suman," "buñuelos," botellas de aguas gaseosas, legumbres frescas, pescados secos, "tinapa" o pescados ahumados y maíz entero con cubierta.

#### "RESTAURANT"

Los restauranes son los establecimientos en donde se sirven alimentos para el desayuno, almuerzo, merienda y cena pero estrictamente prohibidos la venta de los mismos.

Éstos deben situarse en edificios amplios de suficiente ventilación y luz pudiendo ocupar los altos y bajos de los mismos, pero nunca en los zaguanes porque constituyen un peligro de contaminación por ser el único pasadero de los inquilinos que viven en los altos y un egorro a los que acuden a dichos establecimientos. Deben tener su propia cocina con campana y chimenea si lo que gastan es leña, retrete, urinal protegido con tela metálica a prueba de moscas y con visagras automáticas las puertas, lavabo, fregadero, con sifón de grasa, comunicados todos al alcantarillado. En los sitios donde éste no existe, se comunicarán a un tanque séptico sin necesidad de hacer uso del sifón de grasa. Si no es posible la construcción de un tanque séptico, entonces, el fregadero sin sifón de grasa y el lavabo se comunicarán por medio de tubos al canal de la calle, y el retrete por el sistema de cubeta que se colocará en un cuarto separado de la cocina con pavimento de cemento protegido con tela metálica y la puerta con bisagras automáticas.

El establecimiento debe ser pintado de blanco tanto el interior como el exterior, asimismo los armarios de cristal, sillas y mesas. Éstas cubiertas de manteles blancos, y provistas siempre de agua

caliente para el lavado y esterilización de los platos, cubiertos, vasos y otros utensilios que se usan dentro de dicho establecimiento.

Los restaurantes se clasifican en tres clases, a saber: A, B y C.

#### “RESTAURANT” CLASE “A” O PRIMERA CLASE

Es aquel que puede tener cabida no menos de 20 comensales provisto de mesas cubiertas con manteles de telas blancas y armarios de cristal necesarios en donde se colocarán los productos alimenticios para proteger contra las moscas y suciedades; agua hirviendo para la esterilización de los platos, cubiertos y vasos, cocina propia, lavabo, fregadero con sifón de grasa, urinal, retrete y receptáculos de basura y de desperdicios.

#### ‘RESTAURANT’ CLASE “B” O SEGUNDA CLASE

Es aquel que pueda tener menos de 20 comensales, proveyéndose de los mismos utensilios que se exigen a los restaurantes de primera, a excepción hecha del mantel para la mesa que debe ser de ule blanco y sin necesidad de tener urinal.

#### ‘RESTAURANT’ CLASE “C” O TERCERA CLASE

Son aquellos restaurantes conocidos vulgarmente por carinderías, en donde se sirven alimentos por la cantidad que el interesado lo desea, proveyéndose asimismo de todos los objetos y utensilios que se exigen en el “restaurant” clase “B.”

No se servirá en estos establecimientos ninguna comida adulterada, fermentada o en putrefacción. La morisqueta no se colocará en cestos cubiertos de una tela, sino en receptáculos de porcelana herméticamente cerrados.

El agua de beber será destilada o hervida, colocada en un recipiente también limpio, tapado herméticamente y provisto de un grifo. Para helar dicha agua, no se necesita colocar o poner el hielo dentro del receptáculo a fin de evitar la contaminación, sino más bien se construirá un receptáculo de dos compartimientos, uno para el agua y el otro para el hielo, éste rodeará todo el compartimento interior donde se halla colocado el agua y con grifos correspondientes.

No se cuidará ninguna clase de animales dentro y fuera de estos establecimientos. Y que las latas de basura y en especial las de desperdicios estén herméticamente cerradas con el fin de no atraer a las ratas ni otros animales. La limpieza debe ser exquisita, continua y permanente.



No debe situarse en la proximidad de las cuadras, retretes y sitios bajos e insanos.

El interior del "restaurant" así como la cocina y retretes deben mantenerse estrictamente limpios, así como el personal debe llevar traje limpio, las manos siempre limpias, las uñas cortadas, provisto de certificado de buena salud o "health certificate" expedido por un oficial sanitario y de haber sido vacunado contra la fiebre tifoidea, cólera y viruela.

#### "SUBSISTENCE CONTRACTORS"

##### CONTRATISTAS DE RACIONES DE COMIDAS (SUBSISTENCE CONTRACTORS)

Es un negocio que consiste en preparar y distribuir alimentos puestos en fiambreras, a las oficinas, fábricas o edificios públicos en donde se congregan o se reúnen y trabajan muchas personas.

Los individuos que se dedican en este negocio, deben tener sus cocinas bien preparadas, siempre limpias, con suficiente luz y ventilación, provistas de un fregadero con sifón de grasa, lavabo, retrete con tela metálica en las ventanillas para impedir la entrada de las moscas, la puerta con visagras automáticas para estar siempre cerradas, y conectadas al alcantarillado, latas de hierro galvanizado con su tapadera para el depósito de los desperdicios y basuras.

Las fiambreras serán esterilizados en agua hirviendo antes de ser usadas.

Los que manejan los alimentos deben tener las uñas cortadas, las manos limpias, provistos del certificado de buena salud y de haber sido vacunados contra el cólera y tifoidea y viruela.

##### SALONES O TIENDAS DE REFRESCOS

Son los establecimientos en donde preparan, sirven, pero no venden, sorbetes, bebidas refrescantes y otros similares. Éstos son de tres tipos.

*Tipo "A."*—Son aquellos que están provistos de mesas y cuyos comensales no serán menos de 50.

*Tipo "B."*—Son aquellos que también están provistos de mesas y cuyos comensales no serán menos de cuatro.

*Tipo "C."*—Son aquellos que no utilizan ninguna mesa y están provistos de un mostrador con asientos fijos en el suelo en donde se sirven los refrescos llamados vulgarmente kioscos, y que los comensales no tienen acceso al interior del establecimiento.

Éstos no se situarán cerca de las cuadras, de las letrinas públicas, sitios bajos e insanitarios, y que el retrete del establecimiento no esté directamente en comunicación con el cuarto en donde se prepara el refresco; y que este provisto de telas metálicas y puertas automáticas para proteger de las moscas y otros insectos. Debe ser ventilado, con luz suficiente y con su desagüe adecuado y correspondiente fregadero y lavabo conectados al alcantarillado.

El suelo debe ser de cemento concreto, lo menos de 10 centímetros de grosor, el cuarto en donde se preparan los refrescos debe ser construido con tela metálica y que la puerta sea automática, y que esté provisto de una coccinilla para la esterilización de los enseres, y desagüe propio.

Deben proveerse de armario o armarios de cristal en donde se guardarán los panes, pastas, mamones y otros. El edificio se pintará de blanco. Las mesas cubiertas de mantel de ule blanco y no se cuidarán dentro y fuera del establecimiento, animales de cualquiera clase.

Todos los utensilios que se utilizan para la preparación del sorbete y otros refrescos similares, serán colocados en un receptáculo que contenga agua hirviendo a la temperatura de 100° C. por espacio de 30 minutos antes de ser usados.

El agua, leche y azúcar que se utilizan para la preparación del sorbete y otros refrescos similares serán hervidos antes de usarlos, y los restos del sorbete fabricado en el día anterior, no deben ser utilizados para la confección de otros artículos.

Las cucharas, vasos, copas, y platos que se utilizan en el servicio de refrescos serán lavados previamente y esterelizados con agua hirviendo antes de ser usados.

Los empleados tendrán sus ropas limpias, con las manos también limpias y cortadas las uñas y provistos de un certificado de buena salud o "health certificate" expedido por un oficial sanitario que indique que no están afectados de enfermedad contagiosa e infecciosa, y haber sido vacunados contra la tifoidea, cólera y viruela.

#### PANADERÍAS, PASTELERÍAS Y CONFITERÍAS

Son los establecimientos en donde se confeccionan y venden panes, bizcochos, mamones, pasteles, dulces y otros productos similares.

Éstos deben ser ventilados y tener suficiente luz, con pavimento de cemento concreto, de no menos de 10 centímetros de grosor, y pintados de blanco, provistos de un fregadero, lavabo, y

retrete conectados al alcantarillado, y este último con telas metálicas y puerta automática para la protección de las mesas y otros insectos, receptáculos para basura y desperdicios.

Las mesas, moldes y otros utensilios se mantendrán constantemente limpios. Las ventanas y puertas del edificio en donde se confeccionan el pan y otros productos, estarán provistos de tela metálica y cristales con bisagras automáticas para evitar la contaminación por medio de las moscas e insectos.

Asimismo deben proveerse de escupidores, prohibiendo a todos los operarios que escupan al suelo, ni fumar o mascar buyo dentro de dicho recinto.

Los empleados deben gozar de buena salud, desprovistos de cualquiera enfermedad infecciosa y contagiosa, proveyéndose al efecto de un certificado de salud y haber sido vacunados contra la tifoidea y cólera.

Los operarios antes de principiar su trabajo, se lavarán muy bien las manos con jabón y agua hervida, las uñas cortadas y provistos de un traje, gorro y delantal blancos y limpios que se usarán para dicho trabajo expresamente.

Se proveerán asimismo de armarios de cristal o receptáculos herméticamente cerrados para depósito y conservación de los productos elaboradores. Pinzas adecuadas para coger los panes y otros, papel blanco limpio para envoltorio de los mismos.

No se permitirá que los operarios rociarán por medio de la boca a los panes y otros productos antes o después de ser cocidos.

La transportación y distribución de los productos ya confeccionados a otros establecimientos, se verificará por medio de carros provistos de receptáculos herméticamente cerrados en donde se colocarán los panes y otros, envueltos previamente en papeles blancos y limpios, con el fin de evitar toda contaminación, y que el cochero esté acompañado de un empleado quien hará expresamente la distribución, proscribiendo la costumbre de que los aurigas sean los que ejecuten estas funciones.

Los carros deben estar cerrados por todos los lados, excepto en la parte posterior que será provisto de una puerta, y pintados de blanco, tanto el interior como el exterior, y se mantendrán constantemente limpios.

Estos establecimientos se situarán muy lejos de las cuadras, retretes, sitios bajos e insanales, y no se cuidarán cualesquiera animales dentro y fuera de los mismos.

No se permitirá que ninguna persona duerma ni haga uso para dormitorio el cuarto o parte del mismo donde se confeccionan los panes y otros similares.

## CAFETERÍAS

Son los establecimientos en donde se sirven café, "tajú," chocolate, panes y otros productos de panadería y confitería, y sirven asimismo desayuno y merienda.

Estos deben situarse lejos de las cuadras, retretes públicos, sitios bajos e insanaarios. Que el edificio esté ventilado con suficiente luz. El suelo con pavimento de cemento concreto de un grosor de 10 centímetros. El retrete con puerta automática y protegida contra las moscas por medio de telas metálicas, fregadero con sifón de grasa y lavabo, todos conectados al alcantarillado, agua caliente para la esterilización de los platos, cubiertos y otros, armario o armarios de cristal para el depósito y resguardo de los panes y otros productos alimenticios, del polvo, de las moscas e insectos.

Los empleados deben tener los vestidos limpios con delantales también limpios, cortadas las uñas, vacunados contra la fiebre tifoidea y cólera y provistos de un certificado de salud que indique que no se hallan afectados de alguna enfermedad contagiosa e infecciosa.

## FÁBRICAS DE AGUAS GASEOSAS

Son establecimientos en donde se fabrican aguas gaseosas. Deben situarse en sitios lejos de las cuadras, de los depósitos de basuras y sitios bajos e insanaarios y de los escusados públicos, con suficiente luz y ventilación, provistos de desagüe, retrete con puerta automática y telas metálicas para la protección contra las moscas y lavabo conectados todos al alcantarillado.

El pavimento es de cemento concreto de un grosor de 18 a 20 centímetros, con servicio de aguas para el lavado, limpieza y otros.

El edificio debe tener tres compartimientos aislados y separados entre sí: uno para la preparación del jarabe, otro para el embotellamiento, y otro para depósito de los productos ya elaborados.

Todos estos compartimientos se mantendrán continua y estrictamente limpios.

El agua que se ha de usar para la fabricación de aguas gaseosas, ha de ser destilada o hervida previamente a la temperatura de 100° C. en ebullición por espacio de media hora. La conexión de los tubos de los aparatos al depósito del líquido que se ha de utilizar a la fabricación, debe ser con carácter permanente.

Los frascos serán lavados y cepillados en una solución caliente de sosa y puestos en un depósito de agua a una temperatura de 100° C. por espacio de 30 minutos y colocados después en un

receptáculo limpio y adecuado para proteger de la contaminación. Los corchos deben ser asimismo hervidos y esterilizados a una duración de 30 minutos.

La preparación y conservación del jarabe, se verificará en una habitación separada y aislada de las demás, con suficiente luz y ventilación, provista de telas metálicas en las ventanas y puertas automáticas para la protección contra las moscas y otros insectos.

El jarabe debe ser hervido en un receptáculo cubierto y colocado después en un depósito adecuado, limpio y cerrado herméticamente para evitar el contacto con la mano y la contaminación consiguiente.

El agua bicarbonatada será preparada y usada con no menos de 4.8 volúmenes de carbón dióxido con una presión de 70 libras

Los empleados deben estar trajeados de tela blanca especiales y con delantal limpios para uso exclusivamente en la fábrica y lavadas las manos con jabón y agua caliente antes de principiar sus trabajos y en las veces que éstos tuviesen necesidad de ir al retrete.

Asimismo deben estar provistos del certificado de salud que indique que no se hallan afectados de alguna enfermedad contagiosa e infecciosa, y otro certificado de haber sido vacunados contra el cólera y tifoidea.

Deben estar el retrete, el urinal, el lavabo conectados al alcantarillado, separados de la fábrica y aislados debidamente con telas metálicas y puertas automáticas los dos primeros.

#### LECHERÍAS

Son los establecimientos en donde se ordeñan a las vacas, o caraballas, recogiendo cantidades de leche con destino al consumo público.

Éstos deben ser ventilados con bastante luz, el suelo cementado y de un grosor de no menos de 10 centímetros, bien pulimentado, con desagües adecuados, continua y permanentemente limpios y provistos de abundante agua potable por medio del sistema de tuberías o cañerías.

Constarán de tres edificios: uno, edificado a una distancia de 100 metros de los demás, destinado para el recogimiento de los animales para la lechería que se llama establo; con suficiente luz y ventilación, pavimento de cemento de bastante grosor, desagües apropiados y provistos de suficiente agua para la limpieza y receptáculos con tapaderas herméticamente cerradas para los excrementos que después se depositarán en tanques

de 1½ metros de profundidad y 4 por 10 metros de diámetro cubiertos con telas metálicas y desinfectando con una solución de 20 por 1,000 de ácido fénico para evitar la formación de los gusanos que más tarde se convierten en moscas.

Otro, destinado solamente para ordeñar, espacioso, ventilado y de bastante luz, con pavimento de cemento y telas metálicas las ventanas y puertas para proteger de las moscas e insectos, con servicio de agua potable y de desagüe apropiado.

Otro, que se halla dividido en tres departamentos: uno, destinado para el lavado y esterilización de todos los utensilios que se usan en una lechería; el segundo, para la esterilización de la leche; y el tercero, para el depósito de las leches ya preparadas y esterilizadas dispuestas para la venta. Asimismo deben estar provistos de agua con desagües apropiados y telas metálicas en las ventanas y en las puertas con bisagras automáticas, y siempre limpias en cualquier tiempo y que no tengan mal olor.

Los individuos o empleados que trabajan en una lechería para la preparación y esterilización de la leche deben estar provistos de un certificado de salud expedido por un oficial sanitario que indique que se hallan desprovistos de alguna enfermedad infecciosa y contagiosa y que no han estado en contacto reciente a un afectado, y haber sido vacunados contra el colera, tifoidea y viruela.

Las vacas, caraballas y otros animales que se utilizan para la lechería deben estar provistos de un certificado del veterinario del Gobierno que manifieste que dichos animales no están afectados de cualquiera enfermedad propia de animales. Caso de que uno o más animales estuviesen enfermos, serán separados y aislados inmediatamente y no se utilizarán para nada, ni para la lechería ni para otros fines, desinfectando acto seguido el sitio por donde han estado dichos animales enfermos.

Los animales no deben ser alimentados de desperdicios productos de una fábrica o destilería, ni sustancias en estado de fermentación o putrefacción y el establo estará siempre y permanentemente limpio y provisto de un pesebre también limpio en donde se colocará la paja, zacate y otros alimentos de los animales.

Los empleados, antes de verificar el ordeño, se pondrán trajes blancos y limpios con delantal también limpio, propio y exclusivo para dicho establecimiento; las uñas cortadas, y se lavarán las manos con jabón en un lavabo que al efecto se halla provisto dicho departamento. Se lavarán asimismo con jabón y agua esterilizada las tetas y las ingles de las vacas o caraballas antes

de ordeñar. Las vasijas, fracos o receptáculos y utensilios destinados para la colección y preparación de la leche, deben ser de porcelana o cristal con boca ancha que se lavarán primeramente en agua limpia ligeramente caliente, después en agua también caliente con una solución de sosa y últimamente enjaguar en agua hervida fría y esterizarlos al vapor húmedo a una temperatura de 100° C. por espacio de 15 minutos, y se depositarán invertidos en sitios frescos protegidos contra toda contaminación, ya sea por el polvo, suciedad, moscas y otros insectos.

La leche debe ser trasportada del departamento de ordeño al de pasteurización en donde se colocará por medio de una tela esterilizada en frascos provistos de tapones esterilizados sometiendo después a la pasteurización bajo una temperatura de 60° C. por espacio de 30 minutos y manteniéndose después a una temperatura de 10° C.

Los frascos, una vez llenos y preparados, llevarán etiquetas en que manifestarán que la leche que contiene dichos frascos está pasteurizada, consignando asimismo la fecha del embotellamiento y esterilización registradas en un libro que al efecto se llevará en la oficina de la lechería.

Se instalarán retrete y urinal conectados al alcantarillado, o en su defecto a un tanque séptico, pero separado y a una distancia bastante regular de los departamentos de ordeño, esterilización y depósito, protegidos de telas metálicas a prueba de moscas con puertas automáticas.

De ninguna manera se debe habilitar viviendas o dormitorios dentro de ninguno de cualesquiera de los departamentos dedicados para la lechería.

La transportación de los frascos de leche a domicilios, se verificará por medio de carro o carros bastante limpios y pintados interior y exteriormente de blanco inscribiéndose con letras de no menos de 10 centímetros de altura en las partes más visibles del vehículo el nombre y dirección de la persona, firma o corporación propietaria de la lechería.

## MEDIOS CONTRA EL CONTAGIO TUBERCULOSO EN LOS NIÑOS

Por el Dr. JOSÉ A. VIDAL

*Medical Inspector, Philippine Health Service*

Por primera vez en mi vida profesional, dirijo la palabra a una asamblea general de Oficiales de Sanidad de Filipinas; pequeño ha de resultar mi trabajo al lado de otros presentados aquí, pero un exceso de buena voluntad y un entusiasmo muy grande por contribuir mi grano de arena al éxito de esta asamblea, suplirán a mis escasos conocimientos del tema que someto a vuestra ilustrada consideración.

Tres son los puntos que he de tratar en el presente trabajo. El niño en la familia, el niño en la escuela y el niño en sociedad.

### EL NIÑO DE LA FAMILIA

Durante mucho tiempo se ha dicho que la tuberculosis era hereditaria. En efecto, se ha visto en muchas ocasiones, que parecía que padres tuberculosos podían engendrar hijos tuberculosos, pero después de concienzudos trabajos, se ha podido observar, que el bacilo de Koch no se trasmite al feto a través de la placenta y, por lo tanto, el niño no hereda el germen productor de la infección, sino una cierta predisposición, por tanto no nace tuberculoso, sino tuberculizable.

Una porción de experiencias y observaciones se ha hecho respecto a este asunto, pero si bien es cierto que alguna vez el niño ha nacido tuberculoso, para que esto ocurra es necesario que la madre esté atacada de tuberculosis aguda, que sea además generalizada y que pueda ser transportado el bacilo por la sangre.

Pero lo que es más positivo y en lo que está conforme la inmensa mayoría de los autores es que, el niño adquiere la tuberculosis por contagio.

Dos son principalmente las puertas de entrada de la tuberculosis en el niño: una, la vía respiratoria, otra, la vía digestiva; la primera, por inhalación, la segunda, por ingestión.

Casi todos los días puede comprobarse, que es el pulmón el órgano que con más frecuencia y gravedad puede tuberculizarse,



lo cual parece demostrar la penetración directa del bacilo de Koch por las vías respiratorias. En efecto, en la antracosis pulmonar se ve con mucha frecuencia alojarse en el pulmón polvos de distintas clases, partículas metálicas finamente pulverizadas, etc., etc. Si esto ocurre con estas sustancias, ¿por qué el esputo tuberculoso desecado y finamente pulverizado no ha de penetrar en el organismo por las vías aéreas?

Veamos las experiencias de los autores. Villemíal de Val de Grace, en 1868, hizo insuflaciones por una incisión practicada en la tráquea de los conejos, de esputos tuberculosos desecados y pulverizados, demostrando desde este momento los peligros que presentan para la respiración y más particularmente en los medios confinados, los polvos atmosféricos impregnados de esputos tuberculosos desecados.

Tappeiner, en 1877, sometió once perros a la experiencia siguiente: encerrados en jaulas y en un local estrecho, les obliga a respirar esputos tuberculosos disueltos en agua y pulverizados. Resultado, todos menos uno murieron de tuberculosis miliar de ambos pulmones y algunos presentaban las mismas lesiones en otros órganos. Hay que hacer notar aquí un hecho importante: el joven encargado de la limpieza del laboratorio falleció de tuberculosis galopante.

Experiencias análogas practicaron Berthean y Weichselbamn en 1882.

En el mismo año Koch, después de practicadas varias experiencias, concluye diciendo que más que la inhalación de los esputos desecados, el modo habitual de contaminación, es el esputo pulverizado por las quintas de tos.

Otras muchas experiencias se han practicado, pero si bien es verdad que la tuberculosis puede adquirirse por inhalación de los esputos secos, estos hechos en realidad, como sus mismos autores dicen, son poco frecuentes y admiten más la contaminación por los esputos húmedos pulverizados, por las quintas de tos como, indica Koch.

Cadiac y Malet que en 1887 no les habían dado muy buen resultado las tentativas de infección por los polvos secos, pudieron observar con más frecuencia la contaminación por los polvos húmedos y en sus últimas experiencias concluye Cadiac, diciendo que las vías respiratorias son muy favorables al desenvolvimiento de la tuberculosis cuando los bacilos que penetran en su interior tienen como vehículo un líquido, y por tanto, que los individuos expuestos a las inhalaciones de líquidos tuberculosos, como es-

putos diluidos, la saliva, mucosidades proyectadas por los enfermos, contraen casi infaliblemente la tuberculosis.

Thaon en 1885, que hacía estas experiencias en cobayos, acabó por ser víctima de ellas.

En 1906 Thugge anuncia que la infección directa bronquial, es mucho más nociva que la ingestión, que para determinar una tuberculosis mortal de una manera rápida, es suficiente hacer inhalar noventa bacilos.

Insisten estos autores en la importancia que tienen las gotitas de saliva proyectadas por el tuberculoso y según Laschtschenko, esta proyección puede hacerse en sentido horizontal a nueve metros y en el vertical a tres metros, por tanto hay que tener en cuenta que cuando el enfermo tose o estornuda, existe en torno suyo una atmósfera contaminada.

**Puerta de entrada digestiva.** En estos últimos tiempos los autores son partidarios de la teoría digestiva de la tuberculosis, asunto es éste que no he de discutir, pues me llevaría muy lejos y sería salirme del tema asunto de nuestro trabajo, y únicamente me limitaré a enunciar los trabajos de los autores para poder indicar después los medios contra el contagio tuberculoso.

**Transmisión por las carnes.** Para Chauveau no es peligrosa la carne procedente de las carnicerías si ésta no contiene ganglios infectados.

Sin embargo, Koch recomienda no fiarse de las carnes ni las leches.

En general, médicos y veterinarios están acordes en reconocer el peligro de la ingestión de carnes procedentes de animales tuberculosos.

En el Congreso de Tuberculosis de 1888, Peuch presenta hechos positivos de inoculación por las carnes; Galtier por el contrario dice, que en la mayoría de los casos, no es peligrosa la carne de los animales tuberculosos, pero la mayoría de los autores coinciden en el peligro de dichas carnes, sobre todo cuando la cocción no es completa.

Nocard, de 84 inculaciones, no encuentra más que un caso positivo.

Rastuer encuentra numerosos hechos positivos, pero para este autor no son nocivas las carnes, mas que cuando existe tuberculosis muscular.

Una cosa análoga ocurre con las leches. Según Nocard, Chauveau, Galtier y May las leches no son nocivas mas que cuando existe mamitis.

Según estos datos y otros que por demasiado sabidos no consignamos, ¿qué medios tendremos contra el contagio tuberculoso en el niño?

Cuando el niño es hijo de padres tuberculosos, el mejor procedimiento sería separarlo de la familia desde el momento del nacimiento, y encomendarlo a una buena nodriza; en caso contrario debe separarse del resto de la familia, trasladándolo a una habitación amplia, bien soleada y susceptible de fácil ventilación; con razón se ha dicho por mucho tiempo que, donde entra el sol no entra el médico. El contacto con los padres tuberculosos será el menor posible y en todo caso éstos se abstendrán de acariciarle y mucho menos besarle. El cuarto del niño no tendrá alfombras, ni colgaduras, y la limpieza deberá hacerse con paño húmedo, nada de barrido que levanta polvo, y a toda persona sana se le prohibirá escupir en el suelo y mucho menos toser junto al niño.

Si el niño se hiciera catarroso, lo cual es muy frecuente tratándose de hijos de tuberculosos, se le vestirá interiormente con un traje de lana.

Una práctica muy recomendada por los higienistas y que por el contrario está muy abandonada por las familias es la de los baños: todos sabemos la acción tónica que los baños ejercen sobre el organismo.

El niño debe ser sometido al baño desde el momento del nacimiento: se dará diariamente y de dos a cinco minutos de duración, con agua soleada durante el verano y templada durante los meses de invierno.

Cuando el niño duerma se le dejará sólo en la cuna y no se le permitirá bajo ningún pretexto dormir con ninguna persona y mucho menos con sus padres cuando éstos son tuberculosos, es decir, se le aislará cuanto se pueda del foco de infección y a ser posible en absoluto, pues sabido es que el niño adquiere el contagio por sus padres.

Un asunto de gran importancia, que por todos los medios posibles hay que evitar, son las infecciones que con gran frecuencia adquiere el niño; las cuales contribuyen a facilitar el contagio tuberculoso; de estas infecciones las más principales son las fiebres eruptivas y en ellas la viruela es completamente evitable. El niño debe ser vacunado a los dos o tres meses después del nacimiento y si hay epidemia cuanto antes la vacuna de brazo a brazo debe ser desechada en absoluto y la vacuna obtenida de

la ternera debe hacerse después de tener completa seguridad del perfecto estado fisiológico del animal.

**Alimentación.** Asunto es éste de gran importancia y según en las condiciones que se haga se puede evitar la tuberculosis o facilitar el contagio.

El niño, desde algunas horas después del nacimiento hasta que aparece la primera dentición, no debe tomar otro alimento más que la leche.

La lactancia puede hacerse natural, que es la única verdadera y preferible, y artificial, que debe desecharse en lo posible.

Cuando la madre no es tuberculosa es la única nodriza que tendrá el niño, por ser la lactancia más natural y ser además la única persona que prestará al niño los mejores cuidados.

Pero antes de lactar una madre a su hijo, debe mirarse si ésta reúne las condiciones necesarias de salud y si la leche es en cantidad y calidad, la que necesita el niño para su nutrición.

Teniendo en cuenta que la madre no sea tuberculosa y no tenga ninguna otra enfermedad que pueda perjudicar tanto a ella como a su hijo, el primer cuidado que hay que tener es, practicar un reconocimiento de la leche, pero no en la forma que se acostumbra, o sea microscópicamente, pues no podemos saber de esta manera la composición, ni tampoco con esos aparatos llamados lactóscopos, entre los que se encuentran los de Donné y el de Heren, que según sus autores aprecian la riqueza nutritiva de la leche por medio de su transparencia y que en concreto no aprecian nada, sino que la leche debe ser sometida a un reconocimiento químico y micrográfico, pues es necesario para asegurar la nutrición del niño saber la cantidad de agua, caseína, albúmina, grasa, lactosa, materias sólidas y sales que una leche contiene y los elementos celulares y microbianos. Ya me ocuparé de esto al hablar de la lactancia artificial.

Si la madre no puede lactar a su hijo o padece de tuberculosis, es necesario someter al niño a los cuidados de una nodriza, y con las mismas precauciones expuestas al tratar de la madre.

Es interesante el reconocimiento de la leche en la forma indicada porque de esta manera reuniendo las condiciones necesarias para la alimentación del niño, evitaremos algunas enfermedades producidas por las malas condiciones de las leches, y que pueden conducir al niño con gran frecuencia al raquitismo y la mayoría de las veces a gastritis y enteritis repetidas que disminuyen las resistencias orgánicas, y ponen al niño en con-

diciones de adquirir la tuberculosis y con más facilidad cuando tiene antecedentes de esta infección.

**Lactancia mixta.** Esta lactancia es inferior a la natural, pero aunque es mejor que la artificial no deja de tener sus inconvenientes. No me ocupo de ella por ser la unión de la lactancia natural con la artificial de la cual voy a ocuparme.

**Lactancia artificial.** Por no reunir la madre las condiciones necesarias para lactar a su hijo, y lo que es peor en muchas ocasiones, por carecer de los medios necesarios para encomendar la lactancia a una nodriza mercenaria, hay que hacer uso en muchas ocasiones de la lactancia artificial y que es la que mayores peligros ofrece.

Aquí hay que tener en cuenta dos condiciones: la calidad de la leche y el animal de donde procede.

De todas las leches la que más se aproxima a la de mujer es la leche de burra, pero tiene el inconveniente de que resulta cara, y en la mayoría de los casos hay que recurrir a la de vaca.

Dos elementos hay con preferencia en la leche y de aquí que se haga necesario el análisis cuantitativo, éstos son: la caseína y la grasa. La leche de burra tiene menos caseína que la de mujer y ésta a su vez menos que la de vaca; la de burra tiene menos cantidad de grasa que la de mujer, pero éste a su vez más que la de vaca; por tanto, como la caseína es la sustancia que en la mayoría de las veces produce los trastornos digestivos en el niño, la leche será mejor cuanto menor sea la cantidad de caseína y cuanto mayor sea la de grasa, pero esto de una manera relativa, pues tan malo será por exceso como por defecto.

Rara darnos cuenta de esto, a continuación exponemos el siguiente cuadro:

Componentes por 100	Leche de mujer	Leche de vaca	Leche de burra
Agua.....	871.0	894.2	910.2
Materias sólidas.....	129.0	125.8	89.7
Caseína.....	24.8	28.8	20.1
Albumina.....		5.8	
Grasa.....		36.5	12.5
Lactosa.....	60.0	48.1	57.0
Sales.....	4.9	4.1	

Esta composición varía en algunas circunstancias por la alimentación y género de vida.

No me ocuparé de las modificaciones que pueden hacerse de las leches y sobre todo de la leche maternizada, pues esto es asunto de otros trabajos.

Lo que sí hay que tener en cuenta es: la manera de ordeñar y la salud del animal de donde procede la leche.

La manera de ordeñar será en las mejores condiciones higiénicas por parte del operador, del animal y de los utensilios empleados para recoger la leche.

Salud del animal. Sin alterarse para nada la salud del animal hay que tener en cuenta que la leche del mismo no es igual una a otra y también varía con la alimentación y género de vida; los pastos muy nitrogenados dan mucha leche con gran cantidad de manteca, lo mismo ocurre con las vacas alimentadas en el establo; por el contrario, dan gran cantidad de caseína las leches procedentes de animales que pastan al aire libre y en praderas pobres. Un pasto muy rico en agua de una leche acuosa. Hay que tener en cuenta también que algunas sustancias tóxicas, aromáticas o medicamentosas pueden pasar a la leche. Éstas y otras muchas circunstancias deben tenerse presentes en la lactancia artificial.

No hemos de tratar de las distintas enfermedades que pueden tener los animales y que en estos casos las leches no deben ser utilizadas. Por lo que respecta a la tuberculosis, May considera capaz de producir la infección tuberculosa la leche procedente de animales que padecen tuberculosis generalizada, aun cuando las mamas estén intactas, pues se ha podido comprobar en algunos casos la existencia del bacilo de Koch en las leches aparentemente normales.

Klebs, Deume, Leonhardt, Stang y otros autores refieren varios casos de tuberculosis adquirida por la alimentación de la leche procedente de animales en los cuales se han podido comprobar lesiones tuberculosas.

Por tanto, cuando se compruebe que el animal está tuberculoso, no se utilizará ni la leche, ni la carne, que ha de ser la alimentación que más adelante tomará el niño, y lo mejor en este caso, es la destrucción de todo el animal, y fuera de esto y en todo caso, la leche debe ser sometida a la esterilización durante un cuarto de hora y a la temperatura de 110° a 115° C; las carnes no deberán utilizarse más que después de haber sido sometidas a una cocción prolongada.

#### EL NIÑO EN LA ESCUELA

Llegado el momento que el niño puede ir a la escuela, debemos mirar las condiciones que ha de reunir el edificio y la clase del trabajo a que debe ser sometido el niño.

El local será amplio, de fácil ventilación e iluminación. La cubicación aérea será por lo menos de cinco metros por alumno, la atmósfera se renovará con frecuencia y se tendrá un gran cuidado de separar todos los niños tosedores o que presenten síntomas de tuberculosis y los escrofulosos, como también los que presenten dermatosis tuberculosas, los cuales pasarán a formar las colonias escolares de tuberculosos; lo dicho para los niños, se refiere también a los profesores.

Los abrigos y demás ropas se tendrán lo suficientemente separados para evitar el contagio.

Las horas de descanso serán frecuentes con el objeto de no fatigar la inteligencia del niño, ni acumularle muchas materias; hay que fiarse muy poco de los niños prodigios que a una corta edad se les acumulan un gran número de conocimientos y un exceso de trabajo mental y corporal: casi todos estos niños son enfermizos.

En los intervalos de las clases serán sacados los niños al aire libre y durante este tiempo se ventilarán los locales.

Es decir, que por todos los medios posibles, se procurará no disminuir las resistencias orgánicas de un ser tan predispuesto a contaminarse.

#### EL NIÑO EN SOCIEDAD

El niño no debe tener más sociedad que los demás niños de su edad, procurando siempre no reunirlo con compañeros sospechosos. Los salones del niño serán el campo, donde se ocupará en juegos que sin llegar a la fatiga, sean lo suficientemente higiénicos que aseguren su desarrollo y aumenten las resistencias orgánicas.

Pocos o ningún espectáculo público ni privado frecuentará el niño, y si alguna vez ocurre, no asistirá a lugares cerrados.

Y para terminar, pues ya me voy haciendo pesado, diré, para asegurar la ventilación pulmonar, luz para evitar muchas anemias y alimentación abundante y nutritiva con arreglo a la edad del niño que aumentará o sostendrá las resistencias de su organismo, harán que lo mismo el hijo del tuberculoso que el de padres que no lo sean, no contraigan la infección tuberculosa que causa la ruina de las familias y de la sociedad entera.

#### CONCLUSIONES

1. La tuberculosis no se hereda, lo único hereditario es cierto grado de predisposición.

2. El niño adquiere la tuberculosis principalmente por contagio por sus padres.

3. El niño, desde que nace, debe ser separado de los padres tuberculosos o presuntos tuberculosos.

4. Las vías por donde principalmente adquiere el niño la tuberculosis son: la respiratoria y la digestiva, no siendo menos interesante la cutánea.

5. Evitar las enfermedades infecciosas, es el medio más principal contra el contagio tuberculoso.

6. La lactancia debe ser en lo posible natural, materna, cuando en la madre no exista indicios de tuberculosis, mercenaria cuando hay sospechas en la madre, y en este caso la nodriza debe ser sometida a un reconocimiento detenido, y en ambos casos, después de ser sometida la leche a un análisis químico y micrográfico.

7. La lactancia artificial debe desecharse, y en caso contrario utilizar animales cuya leche sea la más parecida a la de mujer y siempre después de un reconocimiento detallado y servirse del mismo animal todo el tiempo que dure la lactancia.

8. Paseos diarios al aire libre y durante las horas de sol.

9. Cuando el niño va a la escuela, se procurará que ésta sea de locales amplios, bien ventilados y soleados.

10. Permanecerá el menor tiempo posible en lugares cerrados.

11. Por una inspección minuciosa y frecuente, serán separados de las escuelas todos los tosedores o sospechosos, tanto alumnos como profesores.

12. No se fatigará la inteligencia del niño.

13. La única sociedad del niño, es el campo y espectáculos al aire libre.

14. La única ocupación los juegos higiénicos.

15. Y en todos los casos, aire, luz y alimentación son los medios contra el contagio tuberculoso en los niños.

Sorsogón, enero 29, 1926.



## COMPARATIVE EFFICIENCY OF CARBON TETRACHLORIDE, CHENOPODIUM, AND THYMOL

By Dr. CRISTOBAL MANALANG

In Zamboanga General Hospital the comparative efficiency of carbon tetrachloride, chenopodium, and thymol against hookworm was tested with the following results:

1. Carbon tetrachloride 1 cubic centimeter to 5.5 kilograms body weight was given to 200 cases once, curing 55 per cent; to 45 cases twice, curing 73 per cent; to 8 cases three times, curing 50 per cent; carbon tetrachloride 1 cubic centimeter to 10 kilograms of body weight was given to 38 cases once, curing 34 per cent; to 18 cases twice, curing 61 per cent; carbon tetrachloride with 4 cubic centimeters as maximum adult dose mixed with saturated solution of magnesium sulphate was given to 43 cases once, curing 53.5 per cent; to 15 cases twice, curing 67 per cent.

2. Chenopodium in the dose of 3 cubic centimeters was given to 57 cases once, curing 40 per cent; to 21 cases twice, curing 33 per cent; and to 8 cases three times, curing 87 per cent.

3. Thymol 2.6 grams was given to 38 cases once, curing 26.3 per cent; to 15 cases twice, curing 20 per cent; to 10 cases three times, curing 50 per cent; to 4 cases four times, curing none.

4. Carbon tetrachloride 1 cubic centimeter to 5.5 kilograms of body weight removed by the first treatment 97 per cent of worms from those given two treatments; 1 cubic centimeter to 7 kilograms of body weight removed 96.5 per cent; 1 cubic centimeter to 10 kilograms of body weight removed 91 per cent; carbon tetrachloride and magnesium sulphate removed 93 per cent, Chenopodium 3 cubic centimeters removed 89.5 per cent; and thymol 2.6 grams removed 74.1 per cent.

5. Carbon tetrachloride 1 cubic centimeter to 7 kilograms of body weight removed 95.2 per cent of *Ancylostomos* and 98.8 per cent of *Nocators* with the first treatment; chenopodium removed 72 per cent of *Ancylostomos* and 91 per cent of *Nocators*; and thymol removed 64.3 per cent of *Ancylostomos* and 74.8 per cent of *Nocators*.

6. Carbon tetrachloride 1 cubic centimeter to 7 kilograms of body weight removed by the first treatment 96 per cent of male *Ancylostomos* and 99 per cent of male *Nocators*; chenopodium removed 79.5 per cent of male of *Ancylostomos* and 92.9 per cent of male of *Nocators*; thymol removed 70.8 per cent of male of *Ancylostomos* and 77.6 per cent of male of *Nocators*. Carbon tetrachloride removed 94.4 per cent of female *Ancylostomos* and 98.5 per cent of female *Nocators*; *Chenopodium* removed 65.4 of female *Ancylostomos* and 89 per cent of female *Nocators*; thymol removed 55.5 per cent of female *Ancylostomos* and 73.4 per cent of female *Nocators*.

## REMARKS ON THE ETIOLOGY AND PATHOLOGY OF LEPROSY

By Dr. H. W. WADE

*Emphasize* features important in diagnosis and clinical understanding.

*Organism*.—Not ordinary "bacillus." Group "acid-fast," variable morphology. *Mycobacterium lepræ* (vulgar name "leprosy bacillus").

Others: Tuberculosis (pathogenic); smegma, free-living (saprophytic.)

Contrast with tubercle bacillus (*Mycobacterium tuberculosis*): (1) Size, smaller; (2) staining, easier; (3) numbers, greater; (4) pathogenicity, much lower; not at all in lower animals; and (5) cultivability, (?).

Toxicity—evidently extremely low.

*Immunology*.—Not thoroughly investigated. (1) Wassermann? Commonly thought to be positive. *Tendency*, but usually negative with refined technic. Kalhn regularly negative.

Specific test not developed. Low toxicity, slight immunological response. Serological differentiation from tuberculosis, which is necessary, is a most difficult problem.

Non-specific changes, globulin increase, often marked. The significance not understood.

*Infection*.—Balance individual resistance and portal of entry against pathogenicity and numbers of organisms introduced.

In general, children most susceptible, though fetus and infant not. Adult much less than children. (Married, about 5 per cent?).

Pathogenicity very low. Therefore, usually requires long contact (house infection), and perhaps lowered resistance.

Portal of entry usually not known. In some, clearly thru skin. Whether other ways not known; doubted by some.

*Latent period* important. Organisms in skin? nerves? lymph nodes?

*Distribution of lesions*.—(a) purely neural?

(b) "Cutaneous" more or less generalized. (Skin, nerves, testes, spleen, liver.) Relation to classification.

*Nature of lesions—Skin.*—Affects technic of examination. *Deep*; epidermis and thin layer beneath exempt. Bacilli are in the tissue, not in the blood. (Compress, cut, 1 or 2 millimeters, discard blood, scrape tissue.)

Bacilli largely in mononuclear leucocytes, as if foreign bodies. Also in endothelium of capillaries, etc.; sometimes in tissue spaces. Ordinarily little other reaction. No polymorphs of acute inflammation. Few (or no) lymphoid and plasma of chronic inflammation. Fibrosis not marged, slow, late. Unlike tuberculosis, no necrosis ordinarily. When true ulceration occurs in a leproma, usually "lepra reaction."

*Nerve.*—More or less "lepra cells" may be present, but bacilli chiefly in the connective tissues. Cause slow fibrosis. This compresses nerve fibers, interfering with transmission of stimuli, (anesthesia, for a time curable), later actual degeneration of fibers, paralysis, atrophy. Note that atrophies are but *sequelæ* of the leprotic lesions of the nerves.

*In diagnosis.*—Remember true leprotic ulcerations contain many bacilli. Tuberculosis of skin few or none; if present, will infect guinea pig. Trophic ulcers usually negative; anesthesia chronic. *Yaws* clinically different, no bacilli, Wassermann (or Kahn) positive. Beware of making a positive diagnosis on two or three acid-fasts from an ulcer!

*Treatment.*—Difficult because of the remarkable adaptation. Comparatively little bodily reaction. Bacilli, apparently protected by the cells that contain them, live long. Nature sometimes cures unaided. Chaulmoogra regularly *if not too many bacilli* (early case), and resistance of patient not too low.

## NOTES ON PARIS GREEN AS LARVICIDE

By C. MANALANG

*Philippine Health Service*

In 1921, Barber<sup>1</sup> introduced Paris green as a larvicide in malaria control. Hackett<sup>2</sup> tried it in Italy with much success while in Brazil, Boyd<sup>3</sup> experienced varied results. A study of the different makes of the drug showed that the effective larvicidal brand showed at least 50 per cent of arsenious trioxide and deep emerald green in color while the unsatisfactory one contained less or no arsenic at all and of pale green color.

Since the creation of the Malaria Control Section of the Philippine Health Service in the latter part of 1926, the Service purchased Paris green in accordance with the specifications set by the Rockefeller Foundation representative based on those of the United States Law (Federal Insecticide, Act of 1910), namely, "to contain not less than 50 per cent arsenious oxide or trioxide, not more than  $3\frac{1}{2}$  of which to be soluble in water and to pass 200 mesh screen."

The writer had always tested the larvæ killing power of Paris green whenever a new stock arrived and found that under laboratory conditions a 1 per cent mixture of good Paris green in dry fine road dust killed at least 90 per cent of all the larvæ in one hour using 30 to 50 larvæ in a pan 17 centimeters in diameter.

Recently another brand of Paris green with 56 per cent to 57 per cent arsenious trioxide manufactured by Lucas & Co., Philadelphia, was subjected to a test. Into each of three porcelain pans 17 centimeters in diameter were placed 32 freshly caught *A. minimus* larvæ of approximately the same sizes (larger instars) in equal amounts of water from the same stream the larvæ were caught. Into pan No. 1 was sprinkled pure road dust which has been passed thru 60 mesh screen, pan No. 2, one gram of a 1 per cent mixture of the old stock

---

<sup>1</sup> M. A. BARBER & T. B. HAYNE. Public Health Reports, December 9, 1921.

<sup>2</sup> L. W. HACKETT. First International Congress of Malaria, Rome, 1925.

<sup>3</sup> M. F. BOYD. The American Journal of Hygiene Monographic, series No. 5, 1926.

of Paris green (5 per cent arsenious trioxide) in road dust and in pan No. 3, one gram of 1 per cent mixture of the new brand of Paris green (57 per cent arsenious trioxide). The test was observed for one hour and the dead larvæ (those that sank in the bottom of the pan and motionless) transferred to fresh clean water at the end of every ten minutes.

The following table shows the result of the test

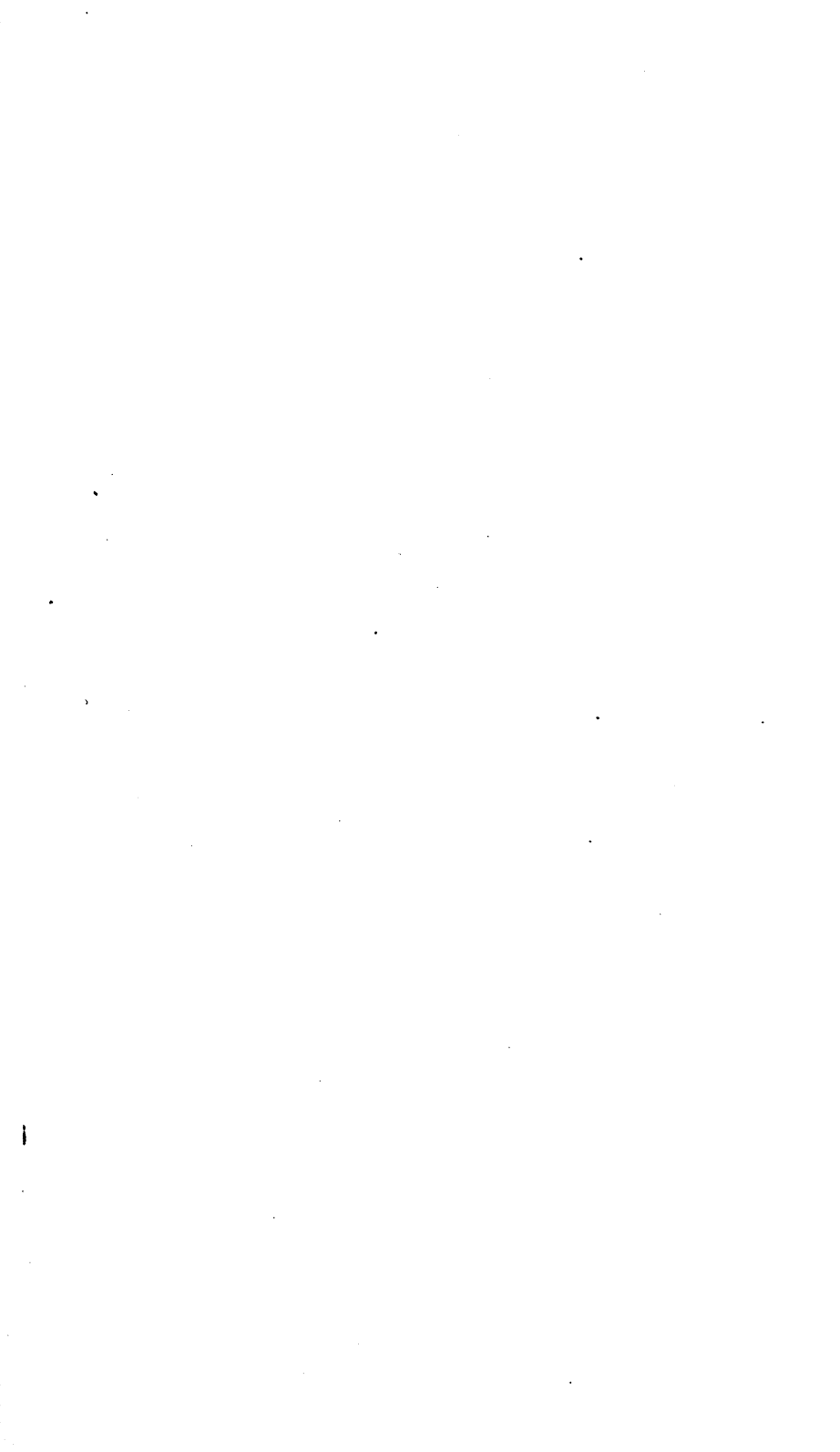
Time	Number of larvæ dead		
	Pan No. 1 Dust only	Pan No. 2 Old Paris green	Pan No. 3 New brand
8:35	0	0	0
8:45	0	1	0
8:55	0	2	1
9:05	0	3	3
9:15	0	13	0
9:25	0	7	5
9:35	0	2	7
Total dead	0	28	16

From the result it is evident that the Lucas brand killed 50 per cent of the larvæ while the old stock 90 per cent. A previous test on a sample of Lucas brand showed an almost identical result as the present test. This discrepancy of the killing power of two brands of Paris green which according to chemical and physical analysis were up to the standard, lead the writer to put the two samples under the microscope. The accompanying microphotograph A shows the old stock and B the new with 50 per cent killing power. The old stock is in crystal or granular form of 8 to 20 microns in diameter and the particles do not adhere to each other, while the new stock (Lucas) is apparently the same granules ground into minute amorphous particles 1 to 2 microns in diameter which in many instances, fuse to form irregular masses of 30 to 40 or more microns. From this, it is evident that the delay in the death of the larvæ is either due to (a) too small a dose of the drug or (b) the coalesced particle too large to enter the mouth of the larvæ. The latter occurrence is more noticeable when 1 per cent mixture with dust on water is viewed under the low power ( $\frac{3}{8}$  objective) of the microscope.

To the naked eye the old stock is dark emerald green of uniform fineness, while the new stock is pale green with uneven fineness giving the impression of a much coarser material than the old stock. In reality this is not the case as the microscopic and water suspension tests show. The new brand being much finer remain suspended in water longer time than the old stock.

*a*

*b*





Where Paris green is to be applied suspended in water in fine spray as used in agriculture no doubt the new brand (Lucas) will probably be more effective. But as *Anopheles* larvicide and applied in the sides of running streams it is not satisfactory, unless the process of grinding the crystals into powder is eliminated.

In view of these findings, it will be necessary to include either biological test or microscopic or both with the chemical and physical requirements set by the Bureau of Standards if Paris green is to be used as an *Anopheles* larvicide.

## MISCELLANEOUS

---

### BULACAN

The outstanding events during the month were: The campaign for an increase of the health fund in Meycawayan, Paombong, and Santa Maria.

The construction of the water works in San Miguel and Bulacan is now progress.

The general health condition of the district is normal as shown by the considerable fall of the health barometer. The slight increase of deaths was due to a few number of cases of dysentery. To remedy the situation, the applications for vacation leave of the corresponding president of sanitary division and district nurse were disapproved by this office.

### ILOILO

The following were considered the principal activities of this office during the month: Investigation, inspection, first aid work during the Western Visayas Athletic meet, disposal of rubbish in the two fires in Iloilo, and shipment of 83 lepers to Culion.

Generally speaking, the health condition of the district was good.

### NUEVA ECIJA

The district health officer has conferred with Captain Jose de Leon regarding the site donated by him to the municipality of Cabanatuan on which the proposed incenerator will be constructed. The deed of donation has been duly signed and legally registered in favor of the municipality of Cabanatuan, and the necessary funds were already released and actual construction will soon be started.

The general health condition of the province was good as indicated by the health barometer.

### OCCIDENTAL NEGROS

The boat for leper collection arrived at Bacolod on December 12, 1927, under the supervision of Doctor Legaspi to transport the lepers confined in the detention camp of the province. According to examinations made by the leper committee, five lepers were found positive and three were found bacteriologically negative.

The general health condition of the municipalities inspected were all normal. Dysentery is now almost under control.

## PANGASINAN

Antimalaria campaign has been waged in Mangatarem, Calasiao, San Fabian and Bugallon. The result was gratifying, because the number of cases and deaths caused by malaria was slightly reduced.

In the towns of Aguilar and Balincaguin it is a sad fact to mention that due to the inability of the municipal officials to furnish the malaria brigade earth dust, no Paris green spraying was made in those localities.

Only two cases affected with hookworms were found in Mangatarem, out of nearly two hundred specimens. Carbon tetrachloride treatment was given to the patients. Practically, 99 per cent of the specimens of feces have shown the presence of ascaris.

In Tayug the health barometer was normal. The poblacion was in good sanitary condition. The spraying of Paris green mixture was not performed, because ditches were dry. For the purpose of establishing a puericulture center in the town, the district health officer made an interview with the officers of the women's club.

## RIZAL

A big fire broke out in Pasay, Rizal, and about 1,000 houses were razed to the ground, rendering thousands of people homeless. Immediately after the disaster, the Sanitary President of Pasay sent sanitary inspectors N. Bernardo and R. Fernandez to rush for the fire unit at the Central Office, but unfortunately a guard was there, and it was only the following day, on December 22, 1927, that proper sanitary measures were taken.

In December 22, a temporary public dispensary was built on the fire zone, and one physician, 2 nurses, 10 sanitary inspectors, and 4 laborers were detailed to render sanitary service.

Two nurses and two sanitary inspectors performed vaccinations against smallpox, typhoid and cholera; four sanitary inspectors and 4 laborers were assigned at the office in the municipal building, and one was on guard in the Emergency Dispensary.

About one hundred persons were vaccinated daily by each unit, and one hundred 30 houses were disinfected around the zone and about 40 persons were given treatment at the dispensary

## SORSOGON

During the month a circular was issued to the subordinate personnel directing them to intensify their vaccination work in the poblacion of each municipality. At the same time the campaign for the apprehension and detention of lepers was emphasized, resulting in the detention of six lepers who were detained in Tahiran Island. During the month the leper collection boat came, and 14 lepers were carried to Culion.

Generally, the health condition in the province was normal. No epidemics of any kind was registered during the month. The prevailing diseases were acute bronchitis, infantile beriberi, congenital debility, convulsions of infants, beriberi, intestinal parasites, influenza, and malaria.

## ZAMBOANGA

An important work accomplished during the month was the inspection of coastwise vessels. There were 29 boats inspected. Out of this number,

seven were found dirty and orders were issued to have these boats cleaned at once, particularly the lower deck and floor of the kitchen.

## NEWSPAPERS' COMMENT

### CITY STABLES GET WARNING

The Philippine Health Service issued a new order requiring owners of stables in the city to a proper disposal of their manure, following a complaint filed by residents of Mayhaligue, Requesens, Gagalangin, Palomar, and the neighboring "cochero" section. Those who failed to comply with the orders were to be taken to court.

The district health officer of the second city station with headquarters at Sampaloc was the first to make the move, as his district was the most involved. The officer himself went out all day with his staff of health inspectors and delivered the orders to all owners of the stables.

### THE HEALTHY SERVICE AND THE SCHOOLS

The district health officer of Bohol who has been accused by eleven public schools girls in the province for alleged abuses against their chastity, committed in the performance of his duties, while making a medical inspection of school pupils, if found guilty, should be punished both administratively and criminally. We are not concerned with the prostitution of his profession by the physician. We are merely interested in the violation of a public trust. The Health Service of the Philippines, in order to perform its sacred mission to the public, should be the first to set a high standard of public morality. And the distasteful action of any of its officials will only serve to destroy the people's faith in the nobility of its purpose and if its usefulness to the community. An adequate punishment to the guilty part will not only restore the confidence of the public which the health service justly deserves, but will also give further assurances that it does not tolerate men of questionable character in its ranks of health crusaders.

### PROVINCIAL HOSPITALS

It is planned to make provincial hospitals independent of the Insular Government within a period of 10 years. During this period the Insular Government will appropriate sufficient funds for the construction and maintenance of provincial hospitals. Then, they will be left entirely to the care of the provinces. This is a wise move. Although the period of time suggested might be rather short to enable the province to finance and maintain their respective hospitals, yet, a province that can afford, with insular aid, to build a hospital, should certainly learn to make the necessary adjustment in its yearly budget so that after 10 years it could be in a position to maintain its hospital entirely from provincial funds. Here is a practical lesson in provincial autonomy. And such a lesson cannot but have a far-reaching effect in the minds of the people in other public improvements.

Likewise, with the partial local autonomy granted by the Legislature to the municipalities, some towns have at last found an opportunity at local autonomy. With the authority to levy municipal taxes, local governments can now exercise some degree of independence and use it to their advantage. Perhaps, there is no better test of the ability of a people to

maintain an autonomous government than that of the exercise of the power of taxation and of the disbursement of municipal funds. This will be a test of the civicism of municipal officials as well as of their capacity to use initiative in the expenditure of municipal funds for the construction of such improvements and maintenance of public institutions as would bring progress and contentment to the people.

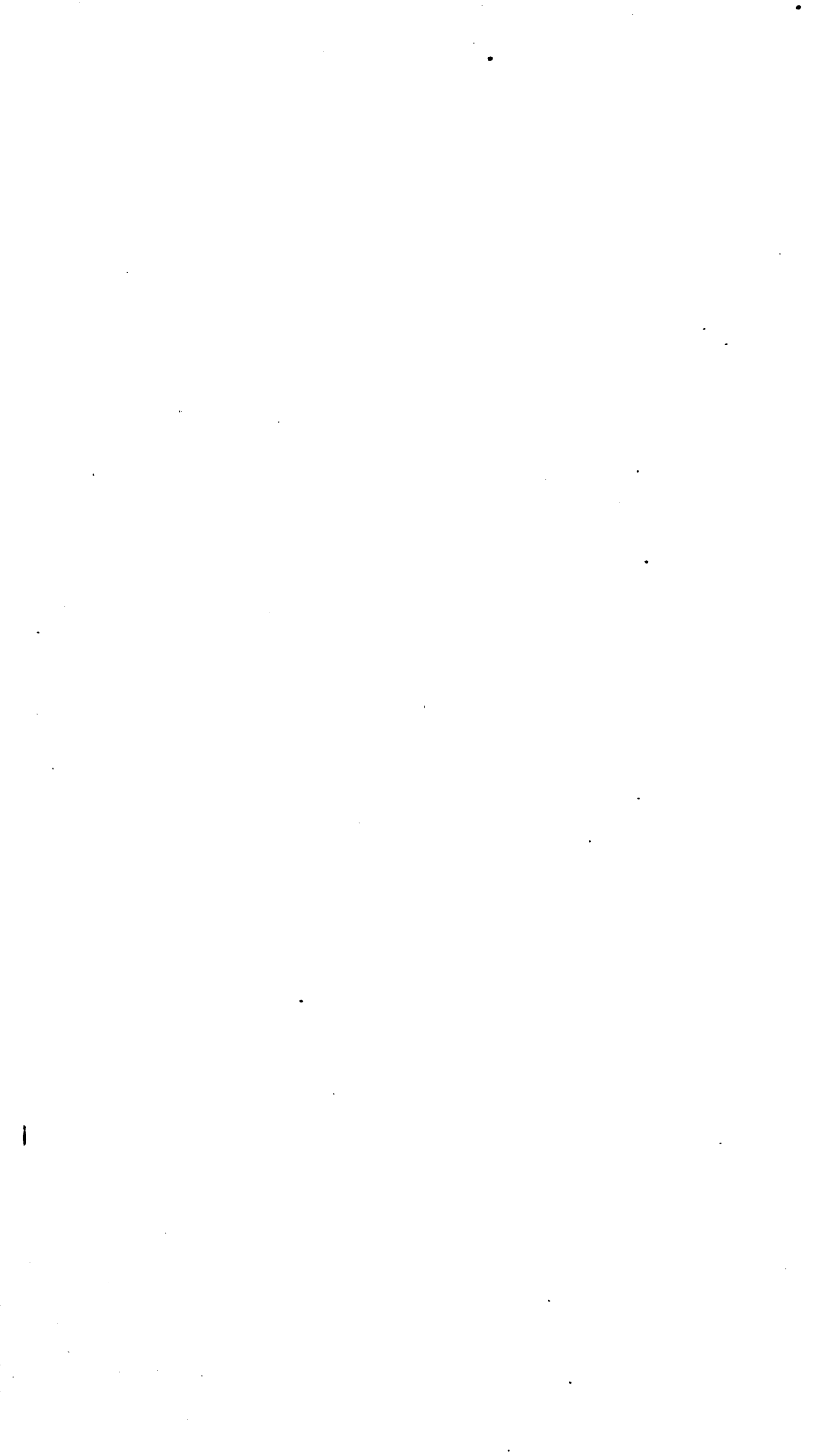
#### THE ISLANDS ARE SAFE AGAINST CHOLERA

That the Philippines is prepared against any eventually of the introduction of cholera, which is reported prevalent many countries in the East, by reason of the immunity of the people from the epidemic and the excellent quarantine service of the islands, is the statement made by Dr. Jacobo Fajardo, Director of the Bureau of Health.

Director Fajardo, speaking the disease, said:

"According to the reports received here, there were during the week ending November 12, a total of 42 cases in Calcutta; Madras, 13; Titicorin 10; Canton and Bombay, 5. Considering the fact that are within a week's communication from China and therefore within the incubating period of cholera, the possibility of it being introduced into the Philippines is not remote.

"With the better knowledge of the disease and the effective quarantine enforcements, however, the danger is minimized a great deal. But should chance cases succeed in landing, the epidemic will not gain headway as about 80 per cent of the population is immuned from the disease. As long as such large a part of our population is protected by anti-choleric vaccination no widespread epidemic need be feared."



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of December, 1927]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1927<sup>1</sup> BY NATIONALITIES

Nationality	Population
Americans .....	3,184
Filipinos .....	294,187
Spaniards .....	1,955
Other Europeans .....	1,126
Chinese .....	17,856
All Others .....	2,186
<b>Total</b> .....	<b>320,394</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo .....	80,745
2. San Nicolas .....	29,168
3. Binondo .....	17,625
<b>Total</b> .....	<b>127,538</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz .....	52,238
5. Quiapo .....	15,862
6. San Miguel .....	4,434
7. Sampaloc .....	39,698
<b>Total</b> .....	<b>112,232</b>
<b>No. III, PACO:</b>	
8. Port Area .....	4,816
9. Intramuros .....	14,625
10. Ermita .....	16,139
11. Malate .....	16,471
12. Paco .....	16,037
13. Pandacan .....	6,861
14. Santa Ana .....	6,675
<b>Total</b> .....	<b>80,634</b>
<b>Grand total</b> .....	<b>320,394</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS DECEMBER, 1927**

Date	Pressure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	760.33	25.5	32.9	7	18.6	4	28.4	28.6
11-20.....	59.75	25.3	31.4	14	21.1	20	28.4	28.6
21-31.....	61.80	24.9	32.5	21	20.0	27,31	27.8	28.1

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	80.4	86.1	5	72.0	4
11-20.....	82.0	88.7	13	76.3	20
21-31.....	79.2	82.1	28	73.8	21

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (Open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	NE	1,191.0	221.0	4	25.8	4.5	4
11-20.....	E quad	1,071.5	167.5	12	22.9	3.8	20
21-31.....	E, SE	1,296.5	160.0	21	32.0	5.3	21

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	56 55	9 15	8	30.2	4
11-20.....	42 20	8 20	14	21.3	7
21-31.....	71 05	9 00	28	0.0	0

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.



# NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	10	6	16	60.16
Filipinos.....	685	602	1,287	51.55
Spaniards.....	8	3	6	36.16
Other Europeans.....	2	1	3	31.89
Chinese.....	35	22	57	37.61
All others.....	7	14	21	113.18
Total and average.....	742	648	1,390	51.11

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MERIC:</b>							
1. Tondo.....	164	154	318	10	9	19	337
2. San Nicolas.....	33	19	52	2	1	3	55
3. Binondo.....	23	18	41	1	.....	1	42
Total.....	220	191	411	13	10	23	434
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	99	67	166	2	2	4	170
5. Quiapo.....	25	24	49	.....	1	1	50
6. San Miguel.....	8	11	19	.....	.....	.....	19
7. Sampaloc.....	133	101	234	5	13	18	252
Total.....	265	203	468	7	16	23	491
<b>No. III, PACO:</b>							
8. Port Area.....	2	.....	2	.....	.....	.....	2
9. Intramuros.....	36	47	83	2	2	4	87
10. Ermita.....	35	39	74	1	.....	1	75
11. Malate.....	73	66	139	4	1	5	144
12. Paco.....	35	37	72	5	3	8	80
13. Pandacan.....	22	11	33	1	1	2	35
14. Santa Ana.....	20	18	38	1	3	4	42
Total.....	223	218	441	14	10	24	465
Grand total.....	708	612	1,320	34	36	70	1,390

Attended by physicians, living, 474; stillbirths, 26.

Attended by midwives, living, 98; stillbirths, 1.

Attended by families, living, 818; stillbirths, 19.

**NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS  
IN THE CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	3	1	4	15.04
Filipinos.....	372	250	622	24.91
Spaniards.....	5	4	9	54.24
Other Europeans.....	1	1	1	10.46
Chinese.....	16	8	24	15.84
All Others.....	1	1	1	5.39
Total and average.....	397	264	661	24.31

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MAINILA BY  
DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEISIC:</b>			
1. Tondo.....	127	94	221
2. San Nicolas.....	29	13	42
3. Binondo.....	11	8	19
Total.....	167	115	282
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	63	28	91
5. Quiapo.....	14	7	21
6. San Miguel.....	9	2	11
7. Sampaloc.....	49	46	95
Total.....	135	83	218
<b>No. III, PACO:</b>			
8. Port Area.....	1	1	2
9. Intramuros.....	22	18	35
10. Ermita.....	6	7	13
11. Malate.....	28	24	52
12. Paco.....	19	12	31
13. Pandacan.....	11	3	14
14. Santa Ana.....	8	7	15
Total.....	95	66	161
Grand total.....	397	264	661

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA.  
TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	148	70
Divorced.....		47
Widowed.....	31	177
Single.....	281	
Conditions not stated.....	8	
Total.....	463	294
Grand total.....	757	

Stillbirths, 46.

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	114	71	8	4	197
1 year plus.....	32	27	4	1	64
2 years plus.....	18	11	2	3	34
3 years plus.....	11	7	.....	.....	18
4 years plus.....	4	2	.....	1	7
5 to 9 years.....	14	7	2	2	25
10 to 14 years.....	11	8	2	3	24
15 to 19 years.....	7	12	6	1	26
20 to 24 years.....	18	9	5	1	33
25 to 29 years.....	23	8	7	5	43
30 to 34 years.....	12	13	1	3	29
35 to 39 years.....	16	10	5	.....	31
40 to 44 years.....	14	13	3	.....	30
45 to 49 years.....	16	15	5	1	37
50 to 54 years.....	12	12	5	2	31
55 to 59 years.....	16	5	4	1	26
60 to 64 years.....	17	9	5	1	32
65 to 69 years.....	7	5	.....	.....	12
70 to 74 years.....	10	5	1	.....	16
75 to 79 years.....	10	4	.....	.....	14
80 to 84 years.....	10	7	.....	.....	17
85 to 89 years.....	2	1	.....	1	4
90 to 94 years.....	2	1	.....	.....	3
95 to 99 years.....	1	2	.....	.....	3
100 years and over.....	.....	.....	.....	.....	.....
Age not stated.....	.....	.....	.....	.....	.....
Total.....	397	264	65	80	756

One male Chinese, age and permanent residence unknown, not included in this table.





NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA—Continued

International numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
108-127	<i>VI. Diseases of the digestive system</i>													
110	Diseases of the esophagus.....				1									1
111	Ulcer of the stomach and duodenum: a. Ulcer of the stomach.....			1	1					1				3
112	b. Ulcer of the duodenum.....			1	1									2
113	Other diseases of the stomach (cancer excepted).....	1		19	5									24
114	Diarrhea and enteritis (under 2 years of age).....			4										4
116	Diseases due to other intestinal parasites: c. Nematodes (other than ancylostoma).....			1	1									2
117	Appendicitis and typhlitis.....			1										1
118	Hernia, intestinal obstruction b. Intestinal obstruction.....				1									1
122	Cirrhosis of the liver: b. Not specified as alcoholic.....			2	1									3
124	Other diseases of the liver.....			2	1									3
126	Peritonitis without specified cause.....				1									1
128-142	<i>VII. Nonvenereal diseases of the genitourinary system and annexa</i>													
128	Acute nephritis (including unspecified under 10 years of age).....			8	6									14
129	Chronic nephritis (including unspecified 10 years and over).....	1		13	10	1	1		1	2	2			31
131	Other diseases of the kidneys and annexa.....			1	1									2
143-150	<i>VIII. The puerperal state</i>													
143	Accidents of pregnancy: b. Ectopic gestation.....				1									1
144	Puerperal hemorrhage.....				2									2
146	Puerperal septicemia.....				1									1
148	Puerperal albuminuria and convulsions.....				1									1
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>													
151	Gangrene.....			1										1
152	Furuncle.....			1							1			2









INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF  
MANILA, DURING THE MONTH OF DECEMBER, 1927 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month		
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 31 days				
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All causes	122	75	16	9	17	10	5	5	5	3	4	3	47	30
Communicable diseases:														
Typhoid and paratyphoid fever (1)														
Smallpox (8)														
Measles (7)														
Whooping cough (9)		1												
Diphtheria (10)														
Influenza (11)		1												
Asiatic cholera														
Dysentery (16)														
Meningococcus meningitis (24)														
Other epidemic and endemic diseases (25)														
Tetanus (29)	2				2								2	
Other infectious diseases (1-42) <sup>1</sup>		1												
Beriberi (55)	13	5	1			1		1			1		3	2
Diseases of the nervous system (70; 71; 80; 85)	5													
Respiratory diseases (99; 100; 101; 107)	31	25				1								
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)	14	3												
Congenital malformations (159)	3													
Early infancy (160; 161; 162; 163)	46	33	15	9	15	8	4	4	4	3	2	3	40	1
All other causes (43-205) <sup>1</sup>	8	5					1						1	

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF DECEMBER, 1927 (INCLUDING TRANSIENTS)—Continued

[Stillbirths not included]

Causes of death	Age at death under 1 year																						Total under 1 year	
	1 month +		2 months +		3 months +		4 months +		5 months +		6 months +		7 months +		8 months +		9 months +		10 months +		11 months +			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
All causes.....	15	7	10	6	6	3	6	5	9	4	4	2	5	1	3	2	8	7	2	5	7	3	75	45
Communicable diseases:																								
Typhoid and paratyphoid fever (1).....																								
Smallpox (6).....																								
Measles (7).....																								
Whooping cough (9).....																								
Diphtheria (10).....	1																							1
Influenza (11).....																								
Asiatic cholera (14).....																	1							1
Dysentery (15).....																								
Meningococcus meningitis (24).....																								
Other epidemic and endemic diseases (25).....																								
Tetanus (29).....																								
Other infectious diseases (1-42) 1.....																								
Barber's (55).....	6	1	1	1	1	1	2															1		1
Diseases of the nervous system (70; 71; 80; 85).....									1	2		2					1		1			1	10	3
Respiratory diseases (99; 100; 101; 107).....	5	1	4	3	1	2	3	3	3	1	2	2	4	1	3	2	3	4	1	3	2	2	31	24
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....																	4	1	1				14	3
Congenital malformations (159).....	1																							
Early infancy (160; 161; 162; 163).....	2	4	1	1	1	1			2	1	1											2	6	
All other causes (43-205) 1.....	1		2	1		2		2	1	1						1					1		7	5

## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	22,196
Number of rats caught by spring traps.....	3,258
Number of cage wire traps set.....	538
Number of rats caught by cage wire traps.....	4
Number and kind of baits (coconuts).....	23,274
Number of poison portions placed.....	21,079
Number of rats found poisoned.....	382
Number of rats killed by clubs and other weapons.....	891
Number of rats found dead from other causes.....	546
Total number of rats otherwise caught, found dead or killed.....	5,081
Total number of rats sent to the laboratory for examination.....	5,081
Total number of rats found positive for plague.....	0

---

TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF DECEMBER, 1927. CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I... No. 1. No. 2. No. 3.	4	3	5	1	1	1			5	4	5	1	10	5
	2								2				2	
	1								1				1	
	3	1	3						3	1	3		6	1
II... No. 4. No. 5. No. 6.	1								1				1	
III... No. 7. No. 8. No. 9.	4				1	1			5	1	1		6	1
	1	1							1	1			1	1
	1		1				1	1	1			1	3	1
No. 10. No. 11. No. 12. No. 13.	1								1				1	
No. 14. Grand total.	19	5	9	1	2	2	1	1	21	7	10	2	31	9

REMARKS:

Cases reported as typhoid fever.....

Cases reported as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Typhoid carrier—None.

31

0

11

5

DESENERIES REPORTED DURING THE MONTH OF DECEMBER, 1927, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	2	1	1	1	2	2	1	1	2	2	2	2	4	4
{No. 1.....}					1	1	1	1	3	2	1	1	4	3
{No. 2.....}														
{No. 3.....}														
II.....	3	1	1	1	1	1			4	2			4	2
{No. 4.....}									1	1			1	1
{No. 5.....}														
{No. 6.....}														
{No. 7.....}	5	3	1		2	2	2	2	7	5	3	2	10	7
{No. 8.....}														
{No. 9.....}		1								1				1
{No. 10.....}														
{No. 11.....}			2								2		2	
{No. 12.....}	1								1				1	
{No. 13.....}														
{No. 14.....}														
Grand total.....	18	7	4	1	6	6	4	4	18	13	8	5	26	18

## REMARKS:

Amebic dysentery.....

Bacillary dysentery.....

Unspecified.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Dysentery carrier-3

3  
18  
5  
9  
5

CHOLERA REPORTED DURING THE MONTH OF DECEMBER, 1927, CITY OF MANILA

749

CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total			
	Male			Female			Male			Female			Male			Female			Cases	Deaths		
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths					
I.	No. 1.																					
	No. 2.																					
	No. 3.																					
	No. 4.																					
II.	No. 5.																					
	No. 6.																					
	No. 7.																					
	No. 8.																					
	No. 9.																					
	No. 10.																					
III.	No. 11.																					
	No. 12.																					
	No. 13.																					
	No. 14.																					
Grand total . . . . .																						

REMARKS:

No nonresident case was reported during the month.

Cholera carrier—16

## DIPHTHERIA REPORTED DURING THE MONTH OF DECEMBER, 1927, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home				Total				Grand total	
	Male			Female			Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. { No. 1.....	2	1		2	1						2	1	2	1	4	2
{ No. 2.....	1										1				1	
{ No. 3.....																
II. { No. 4.....	1			3							1		3		4	
{ No. 5.....	1										1				1	
{ No. 6.....																
{ No. 7.....					1									1		1
{ No. 8.....																
{ No. 9.....																
{ No. 10.....																
{ No. 11.....																
{ No. 12.....														1	1	1
{ No. 13.....																
{ No. 14.....				1									1		1	
Grand total.....	5	1		6	2				1	1	5	1	7	3	12	4

## REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—6

4

1



**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF DECEMBER, 1927**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria	8	2	1	1
Varicella	1	15		
Varioloid				
Smallpox				
Measles	4	2		
Whooping cough		1		1
Influenza	5	3	1	2
Bubonic plague				
Encephalitis lethargica				
Meningitis cerebrospinal epidemic	1		1	
Tuberculosis of the respiratory organs	154	137	95	60
Tuberculosis of the other organs	10	4	10	4
Beriberi, infantile	10	5	10	5
Beriberi, adults	1	4	1	4

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria	12	2	2	
Varicella		1		
Varioloid				
Smallpox				
Measles	1			
Whooping cough	3			
Influenza		2		
Bubonic plague				
Encephalitis lethargica				
Meningitis cerebrospinal epidemic	1			
Tuberculosis of the respiratory organs	14	15	9	6
Tuberculosis of the other organs	1	1	1	1
Beriberi, infantile	3		3	
Beriberi, adults	1		1	

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES FOR THE  
MONTH OF DECEMBER, 1927**

Sera and vaccines	On hand December 1, 1927	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of the month
Anti-diphtheric serum (units)	490,000		490,000	490,000	
Anti-dysenteric serum (ampoules)	77	200	277	112	165
Anti-tetanic serum (units)	300,000		300,000	300,000	
Cholera vaccine (c.c.)	900	24,000	24,900	24,900	
Dried vaccine virus (units)	85,700	50,000	135,700	80,700	55,000
Dysenteric vaccine (c.c.)	600	15,000	15,600	14,400	1,200
Fresh vaccine virus (units)	87,700	100,000	187,700	145,500	42,200
Mixed typhoid-cholera vaccine (c.c.)	57,300	51,000	108,300	108,300	
Typhoid vaccine (c.c.)	17,820	17,940	35,760	30,000	5,760

REPORT OF ANTI-SMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF DECEMBER, 1927

Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated					
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over	
			Never	Successfully	Unsuccessful	Positive	Negative	Positive	Negative	Total
No. 1.	Tondo.....	588	124	445	19	205	17	12	8	225
	San Nicolas.....	135	123	12	12	191	14	8	8	207
	Binondo.....	150	125	3	22	180	10	6	5	191
	Santa Cruz.....	136	119	1	16	98	7	4	1	98
	Quiapo.....	186	118	2	16	92	5	7	5	104
No. 2.	San Miguel.....	142	120	2	22	41	4	6	5	46
	Sampaloc.....	678	132	527	19	108	11	10	508	626
	Port Area.....	2	2	2	2	2	2	2	2	2
	Intramuros.....	149	128	2	19	57	9	2	6	65
	Ermita.....	123	104	19	19	49	14	4	4	57
No. 3.	Malate.....	148	131	3	14	61	15	6	1	68
	Paco.....	274	125	131	18	72	11	6	5	83
	Pandacan.....	149	127	1	21	53	13	2	3	58
	Santa Ana.....	145	125	2	18	59	12	5	4	68
	Total.....	2,955	1,603	1,117	235	1,263	142	77	1	1,898
									50	193

VACCINE VIRUS:

Remaining from last month.....	8,370	Units
Received during the month.....	5,500	do.
Used during the month.....	5,800	Units
Remaining for next month.....	8,070	do.
	13,870	do.
	13,870	do.

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.....	{ Tondo.....	9	3	3	1	12	4
	{ San Nicolas.....	3	2	5	1	8	3
	{ Binondo.....						
No. 2.....	{ Santa Cruz.....	12	5	6		18	5
	{ Quiapo.....	8	10		1	8	11
	{ San Miguel.....						
	{ Sampaloc.....	22	10	14	10	36	20
No. 3.....	{ Port Area.....						
	{ Intramuros.....	2	1			2	1
	{ Ermita.....						
	{ Malata.....	5				5	
	{ Paco.....						
	{ Pandacan.....						
	{ Santa Ana.....						
Total.....		61	31	28	13	89	44

ANTI-TYPHOID AND ANTI-CHOLERA VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF DECEMBER, 1927<sup>1</sup>

Health districts	Municipal districts	Number of injections made in—												Total number of injections						
		Adults						Children						Total number of injections						
		First injections		Second injections		Third injections		First injections		Second injections		Third injections		First		Second		Third		
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	
No. 1.	{	Tondo.		797		685		570	3	416		470		305	3	1,213		1,155		875
		San Nicolas.		763		539		406		206		5		367		969		959	3	773
		Binondo.		613		303		206		56		420	3	39		669	5	343		245
		Santa Cruz.		807		535		572		237				403		1,044		1,004		975
		Quiapo.		160		116		105		59		43		33		219		159		133
No. 2.	{	San Miguel.		45		21		40		40		37		56		85		77		77
		Sampaloc.		1,857		1,816		1,891		1,024		1,014		804		2,881		2,830		2,636
		Port Area.																		
		Intramuros.		316		314		199		70		63		59		386		377		258
		Ermita.		710		416		217		83		69		209		793		485		426
No. 3.	{	Malate.		639		463		508		488		617		400		1,127		1,080		908
		Paco.		419		319		442		319				214		733		541		656
		Pandacan.		239		181		187	30	93	15	78	10	59	30	332	15	259	10	246
		Santa Ana.																		
		Total.		7,365		5,727		5,324	33	3,091	20	3,542	13	2,948	33	10,456	20	9,269	13	8,272

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

V, in persons never vaccinated before; R, revaccinations.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	Total vaccina- tions	Vaccinations		
		Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	14,026	2,788	4,009	7,279
Agusan.....	8,948	2,199	3,273	3,476
Albay.....	52,520	10,423	10,704	31,393
Antique.....	16,252	4,170	7,615	4,467
Bataan.....	14,292	5,282	4,393	4,617
Batanes.....	8,493	285	761	2,497
Batangas.....	54,589	16,056	11,699	26,784
Bohol.....	25,983	9,843	6,167	9,973
Bukidnon.....	7,645	2,313	2,166	3,166
Bulacan.....	27,312	9,648	8,795	8,869
Cagayan.....	82,669	16,024	51,639	15,006
Camarines Norte.....	25,467	6,000	8,926	10,541
Camarines Sur.....	32,219	8,658	9,519	14,042
Capiz.....	51,553	11,310	23,215	17,028
Catanduanes.....	18,810	4,046	3,153	11,611
Cavite.....	60,220	7,740	41,973	10,507
Cebu.....	122,184	40,518	17,525	64,141
Cotabato.....	28,003	7,860	8,717	11,426
Davao.....	41,965	18,894	12,546	10,125
Ilocos Norte.....	50,304	8,459	22,481	19,414
Ilocos Sur.....	32,688	7,872	4,890	19,926
Iloilo.....	141,482	38,650	78,557	24,275
Isabela.....	37,556	8,949	16,561	12,046
Laguna.....	94,916	13,284	66,535	15,097
Lanao.....	37,639	14,225	17,113	6,301
La Union.....	28,129	5,916	311	21,902
Leyte.....	145,220	42,605	55,416	47,199
Marinduque.....	61,694	5,142	41,711	14,841
Masbate.....	42,605	6,761	25,579	10,265
Mindoro.....	7,247	1,627	1,915	3,705
Misamis.....	29,237	10,255	2,940	16,042
Mountain Province.....	56,336	15,926	29,744	10,666
Nueva Ecija.....	30,958	12,340	5,926	12,692
Nueva Vizcaya.....	5,321	1,597	849	2,875
Occidental Negros.....	113,384	39,637	48,171	25,576
Oriental Negros.....	39,346	12,745	11,721	14,880
Palawan.....	8,576	1,064	1,635	877
Pampanga.....	37,593	11,411	10,845	15,337
Pangasinan.....	58,064	19,441	8,446	30,177
Rizal.....	80,713	15,263	60,474	4,976
Romblon.....	41,677	7,139	23,757	10,781
Samar.....	95,909	16,901	39,910	39,098
Sorsogon.....	29,998	12,570	308	17,120
Sulu.....	33,749	20,719	4,521	8,509
Surigao.....	8,822	4,001	887	3,934
Tarlac.....	30,375	6,957	17,210	6,208
Tayabas.....	39,077	15,908	8,339	14,830
Zambales.....	12,932	4,596	2,660	5,676
Zamboanga.....	12,686	3,709	1,744	7,133
Total.....	2,127,283	569,626	848,301	709,356

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>—Continued**

Provinces	Inspections of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	1,072	582	2,329	1,782	2,522	4,353	5,923	6,717
Agusan.....	318	257	472	286	1,606	1,134	2,396	1,677
Albay.....	4,755	1,453	6,673	1,657	11,236	5,200	22,664	8,310
Antique.....	1,641	466	1,807	1,183	1,675	2,190	5,123	3,839
Bataan.....	2,841	542	3,657	1,528	3,019	1,246	9,517	3,316
Batanes.....	307	98	671	241	1,047	515	2,025	854
Batangas.....	8,036	2,059	11,604	4,756	10,997	8,934	30,637	15,749
Bohol.....	3,800	1,201	4,552	1,944	6,078	4,596	14,430	7,741
Bukidnon.....	167	188	614	705	1,889	2,972	2,670	3,865
Bulacan.....	7,688	1,889	5,648	2,180	5,434	3,373	18,770	6,942
Cagayan.....	5,515	924	9,859	2,148	20,925	21,664	35,799	24,736
Camarines Norte.....	3,847	792	5,516	1,888	7,074	2,844	16,437	5,024
Camarines Sur.....	5,196	1,786	4,975	1,752	10,051	4,944	20,222	8,432
Capiz.....	4,034	840	5,520	2,454	17,008	8,325	26,562	11,619
Catanduanes.....	1,519	844	1,702	978	2,321	1,565	5,642	3,387
Cavite.....	5,539	866	5,851	2,123	16,382	17,217	27,772	20,206
Cebu.....	12,304	3,967	14,006	4,919	15,152	15,053	41,462	23,939
Cotabato.....	845	603	2,021	1,937	6,368	5,854	9,234	8,394
Davao.....	1,205	403	3,380	1,278	14,927	7,027	19,612	8,708
Ilocos Norte.....	5,117	1,613	7,776	2,779	12,313	12,228	25,206	16,620
Ilocos Sur.....	3,699	1,318	5,746	2,418	6,090	6,185	15,535	9,921
Iloilo.....	9,360	1,370	18,394	4,783	41,367	33,570	69,121	39,723
Isabela.....	2,487	1,102	4,916	1,605	10,947	8,412	18,350	11,119
Laguna.....	4,910	1,186	7,767	3,333	22,386	23,837	35,063	28,356
Lanao.....	623	152	2,677	706	9,338	4,701	12,638	5,559
La Union.....	3,615	1,090	4,415	3,472	3,868	5,689	11,898	10,251
Leyte.....	5,885	1,628	19,376	4,663	46,311	19,202	71,572	25,493
Marinduque.....	1,393	417	3,928	1,271	22,121	10,328	27,442	12,016
Masbate.....	1,364	406	3,533	991	12,950	7,818	17,847	9,215
Mindoro.....	886	319	796	383	1,914	1,394	3,596	2,096
Misamis.....	1,875	750	2,847	1,454	4,734	3,163	9,456	5,367
Mountain Province.....	1,685	329	4,980	1,258	19,454	10,701	26,119	12,288
Nueva Ecija.....	5,001	1,743	7,167	2,913	5,063	4,894	17,231	9,550
Nueva Viscaya.....	785	336	667	623	972	1,657	2,424	2,616
Occidental Negros.....	8,471	1,555	14,323	3,873	23,369	21,495	46,163	26,923
Oriental Negros.....	5,200	1,547	5,787	2,771	10,191	5,677	21,178	9,995
Palawan.....	215	77	412	219	1,217	957	1,844	1,253
Pampanga.....	4,063	1,059	3,297	1,188	5,108	5,036	12,468	7,283
Pangasinan.....	10,384	2,552	11,815	4,064	10,635	9,954	32,834	16,570
Rizal.....	5,638	2,155	6,481	2,911	16,081	24,296	28,200	29,362
Romblon.....	1,650	260	4,919	1,399	15,019	10,927	21,588	12,586
Samar.....	4,076	1,458	9,280	5,166	24,766	15,577	38,122	22,201
Sorsogon.....	2,476	1,002	5,376	2,384	8,664	4,489	16,516	7,876
Sulu.....	1,710	547	5,994	1,726	10,274	4,032	17,978	6,305
Surigao.....	1,084	391	1,400	557	2,290	1,231	4,774	2,179
Tarlac.....	2,898	1,147	4,619	2,743	5,502	8,664	13,019	12,554
Tayabas.....	5,815	952	8,149	1,823	13,352	6,716	27,316	9,521
Zambales.....	2,286	664	2,069	1,203	1,981	3,091	6,336	4,958
Zamboanga.....	691	717	1,239	1,540	1,889	2,766	3,819	5,023
Total.....	175,971	49,082	270,502	101,458	525,877	397,693	972,350	548,233

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI DYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	1,678	468		2,146
Albay.....	428	289		712
Antique.....	634	386		1,020
Bataan.....	743	610		1,353
Batangas.....	228	132		360
Bukidnon.....	189	156		345
Bulacan.....	890	489		1,349
Cagayan.....	480	240		720
Camarines Sur.....	30	22		52
Ilocos Sur.....	175	80		255
Iloilo.....	1,095	583		1,678
Laguna.....	4,599	2,981		7,580
La Union.....	2,054	1,431		3,485
Masbate.....	2,784	532		3,316
Mindoro.....	689	318		1,002
Misamis.....	67			67
Pampanga.....	1,025	185		1,210
Rizal.....	1,593	895		2,488
Romblon.....	191	56		247
Samar.....	71	46		117
Surigao.....	1,409	1,041		2,450
Tarlac.....	769	235		1,004
Tayabas.....	4,918	3,194		8,112
Total.....	26,724	14,344		41,068

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay .....	26,849	9,452	169	36,470
Antique .....	19,262	9,777		29,039
Bataan .....	1,972			1,972
Batangas .....	21,386			21,386
Bulacan .....	190,213	4,238		194,446
Camarines Norte .....	1,841	10		1,851
Camarines Sur .....	27,634	1,035		28,669
Capiz .....	13,516	6,008		19,524
Catanduanes .....	895	368		1,263
Cavite .....	336			336
Cebu .....	57			57
Ilocos Norte .....	15,428	7,687		23,115
Ilocos Sur .....	47	32		79
Iloilo .....	21,387	4,383		25,775
Isabela .....	570	253		823
Laguna .....	7,251	1,326		8,577
Lanao .....	1,140	764		1,904
Leyte .....	61,048	20,865		81,913
Marinduque .....	502	280		782
Masbate .....	223	108		331
Mindoro .....	515			515
Nueva Ecija .....	316	221		537
Pampanga .....	19,234	6,183		55,417
Pangasinan .....	9,878	5,708		15,586
Rizal .....	66,152	15,573		81,725
Romblon .....	7,626	227		7,853
Samar .....	4,583	1,518	146	6,247
Sorsogon .....	9,076	908		9,984
Tarlac .....	8,509	2,278		10,787
Total .....	567,446	99,202	315	666,963

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay .....	387	333	179	899
Batangas .....	4,903	2,980	478	8,361
Bulacan .....	2,703	1,840	1,363	5,906
Bukidnon .....	123			123
Camarines Sur .....	625	141	3	769
Catanduanes .....	7	6		13
City of Baguio .....	17	17	17	51
Iloilo .....	2,038	982	357	3,377
Laguna .....	10,671	7,169	2,345	20,185
La Union .....	267	242	244	753
Mountain Province .....	117	111	111	339
Nueva Ecija .....	1,063	798	447	2,308
Pampanga .....	2,750	1,767	864	5,381
Pangasinan .....	2,506	2,054	1,856	6,416
Rizal .....	1,811	672	92	2,575
Romblon .....	145	50		195
Samar .....	522	23		545
Sorsogon .....	115			115
Tarlac .....	1,080	416	29	1,525
Zambales .....	30	30	30	90
Total .....	31,380	19,631	7,915	59,426

<sup>1</sup> Incomplete; reports from other provinces not yet received.



**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA)  
VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1927 <sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	14	14		28
Agusan.....	10,040	3,193		13,233
Antique.....	390	222		612
Bataan.....	5,627	3,832		9,459
Batanes.....	2,178	1,963	1,306	5,447
Batangas.....	4,350	2,705		7,055
Bohol.....	4,599	3,504		8,103
Bukidnon.....	76	54		130
Bulacan.....	1,352	646		1,998
Cagayan.....	8,927	3,991		12,918
Camarines Norte.....	8,161	5,780		13,941
Camarines Sur.....	4,132	1,913		6,045
Capiz.....	834	387		1,221
Cavite.....	73,092	71,639		144,731
Cebu.....	32,242	9,946		42,188
Cotabato.....	839	9		848
Davao.....	4,776	2,668		7,444
Ilocos Norte.....	4,646	3,763		8,409
Ilocos Sur.....	4,346	3,760		8,106
Iloilo.....	19,659	10,468		30,127
Isabela.....	183	130		313
Laguna.....	1,232	806		2,038
Linao.....	7,783	4,431		12,214
La Union.....	6,377	5,323		11,700
Leyte.....	16,996	4,830		21,826
Marinduque.....	3,993	1,280		5,273
Masbate.....	2,285	1,090		3,375
Mindoro.....	1,357	401		1,758
Misamis.....	12,243	3,437		15,680
Mountain Province.....	700	30		730
Nueva Ecija.....	20,624	12,132		32,756
Nueva Vizcaya.....	5,946	4,849		10,795
Occidental Negros.....	76,185	40,720		116,905
Oriental Negros.....	5,285	2,951		8,236
Palawan.....	216	135		351
Pampanga.....	67,540	25,380		92,920
Pangasinan.....	6,644	4,977		11,621
Rizal.....	37,209	19,818		57,027
Romblon.....	96	17		113
Samar.....	10,007	4,499		14,506
Surigao.....	1,821	1,214		3,035
Tarlac.....	6,419	1,460		7,879
Tayabas.....	28,091	13,997		42,088
Zambales.....	10,899	10,299		21,198
Zamboanga.....	8,062	1,997		10,059
Total.....	528,473	296,155	1,306	825,934

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF DECEMBER, 1927**

Sanitary orders	Health districts			Total
	No. 1 Meisic	No. 2 Sampaloc	No. 3 Paco	
<b>Orders pending, December 1, 1927:</b>				
Minor.....	116	138	81	335
Sewer.....	27	52		79
Vacating.....	8	11		19
Filling.....	24	36	21	81
<b>Total.....</b>	<b>175</b>	<b>237</b>	<b>102</b>	<b>514</b>
<b>Orders issued during the month:</b>				
Minor.....	5	4	6	15
Sewer.....	2			2
Vacating.....				
Filling.....			1	1
<b>Total.....</b>	<b>7</b>	<b>4</b>	<b>7</b>	<b>18</b>
<b>Orders completed during the month:</b>				
Minor.....	8	18	11	37
Sewer.....	2			2
Vacating.....				
Filling.....			1	1
<b>Total.....</b>	<b>10</b>	<b>18</b>	<b>12</b>	<b>40</b>
<b>Orders cancelled during the month:</b>				
Minor.....				
Sewer.....				
Vacating.....				
Filling.....				
<b>Total.....</b>				
<b>Orders pending December 31, 1927:</b>				
Minor.....	113	124	76	313
Sewer.....	27	52		79
Vacating.....	8	11		19
Filling.....	24	36	21	81
<b>Total.....</b>	<b>172</b>	<b>223</b>	<b>97</b>	<b>492</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	25	48	42	115
<b>Permits for minor building constructions:</b>				
Approved.....	34	41	31	106
Disapproved.....	8	2	3	13
<b>New buildings completed.....</b>	<b>8</b>	<b>31</b>	<b>24</b>	<b>63</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	8	12	23	43
Disapproved.....	2	1	1	4
<b>Prosecutions:</b>				
Convictions.....				
Dismissals.....	1	1		2
Amount of fines.....				
<b>Plumbing permits issued.....</b>	<b>31</b>	<b>60</b>	<b>49</b>	<b>140</b>
<b>Plumbing projects completed.....</b>	<b>38</b>	<b>75</b>	<b>46</b>	<b>159</b>
<b>Premises connected to the sanitary sewer to November 30, 1927.</b>	<b>2,532</b>	<b>4,353</b>	<b>748</b>	<b>7,633</b>
<b>Connected during the month.....</b>	<b>5</b>	<b>6</b>	<b>4</b>	<b>15</b>
<b>Total.....</b>	<b>2,537</b>	<b>4,359</b>	<b>752</b>	<b>7,648</b>

Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan and Santa Ana.

# MONTHLY BULLETIN

OF THE

## PHILIPPINE HEALTH SERVICE

INDEX TO VOLUME VII, JANUARY TO DECEMBER, 1927

Abra:	Page
Campaign of measles.....	24; 361; 431
Construction of a public dispensary.....	649
Examination of school children.....	364
Health condition .....	145
Activities of the Cancer Committee.....	185a
Addresses .....	16a; 30a; 54a; 64a; 76a; 98a; 108a; 141a; 145a; 147a; 149a
Albay:	
Arrival of Dr. Arenas, Felipe.....	145
General situation of the province.....	361
Neosalvarsan injection .....	20; 68; 535
Anticholera vaccination:	
Method of campaign .....	641
Technique .....	642
Antique:	
Conference of a district health officer with the Director.....	145
General sanitation of municipalities.....	20
Inauguration of Culasi water system.....	583
Location of leper detention camp.....	68
Physical examination of all teachers in Normal Institute.....	317
Bataan:	
Adoption of sanitary code.....	31
Campaign on malaria.....	582
Garden Day .....	20
Investigation of typhoid fever.....	68
Lectures on beriberi, tuberculosis of the lungs.....	317; 431
Survey of the town.....	145
Vaccination campaign .....	649
Batanes:	
Campaign against diarrhea, enteritis, and dysentery.....	318; 364
Increase of mortality.....	146

NOTE.—Number of page with letter "a" refers to Health Officers' Second General Assembly, held at Baguio, Benguet, May 3-14, 1927.

<b>Batangas:</b>	<b>Page</b>
Antipolo closets .....	20; 361
Conferences given in sanitary division.....	649; 146
Inspection of schools .....	145; 318; 364; 431
<b>Beriberi:</b>	
Dietary origin .....	44a
Epidemic in Bukidnon.....	319
Situation in the Philippine Islands.....	38a
<b>Bohol:</b>	
Inspection trip .....	69; 361; 364
Lepers .....	24
Physical examination of school children.....	535
<b>Bukidnon:</b>	
Baby contest in Malako.....	147
Campaign against yaws.....	650
<b>Bulacan:</b>	
Construction of waterwork.....	728
Provincial Fair .....	20
Raising the appropriation .....	69
<b>Cagayan:</b>	
Campaign against measles .....	535
Dysentery epidemic .....	20
Vaccination work against typhoid and cholera.....	432
<b>Camarines Norte:</b>	
Antismallpox vaccination .....	20
Cases of dysentery .....	582
<b>Camarines Sur:</b>	
Antismallpox vaccination .....	147
Health condition .....	69
Carbon tetrachloride poisoning .....	147
<b>Catanduanes:</b>	
Neosalvarsan injection .....	431
<b>Cavite:</b>	
Committee on beriberi investigation.....	362
Comparative value of Khan and Wasserman test.....	351
Vaccination campaign .....	69
<b>Cebu:</b>	
Convention of nontechnical personnel.....	365
Health condition .....	147
Larvæ collection of Anopheles mosquito.....	70
Physical examination of public-school children.....	362
Sanitary contest .....	563
Challenge science to prevent disease.....	653
City Stables get warning.....	730
Cholera .....	366
Classification pulmonary tuberculosis .....	356
Comparative efficiency of carbon tetrachloride, cherpodium, and thymol .....	731

	Page
<b>Cotabato:</b>	
Malaria prevention .....	70
Physical examination of school children.....	365
Survey of malaria situation.....	147
Vaccination of antivariolic, and anticholera.....	318; 362
<b>Davao:</b>	
Malaria .....	362
Survey of mosquito larvæ.....	21
Opening of a new public dispensary.....	582
Diseases of the lower animals.....	113a
Disposición y empleo de las basuras.....	119
Dispensary system in Mindanao and Sulu.....	483
Dysentery .....	366
Eclecticismo en tuberculosis.....	127a
Establecimiento de dispensarios públicos en los barrios.....	571
Engineering help and your coöperation.....	102
Foreword, Transaction of the Health Officers' Second General As- sembly at Baguio.....	90a
Full text of last report of late Governor Wood.....	429
Government hospital principles of ethics.....	532
High school for lepers.....	319
Hints on beriberi prevention.....	354
History of smallpox and vaccination in the Philippines.....	192
House Bill No. 373, granting freedom to lepers under certain con- ditions .....	465
Housing .....	111; 319
<b>Hospital and dispensaries:</b>	
Means to stabilize health funds.....	358
Hydrophobia, attributed to negligence.....	366
<b>Ilocos Norte:</b>	
Health condition .....	650
Inspection trip .....	363
Meeting of health officers and district nurses.....	148
Provincial Fair .....	71
Sanitary condition .....	22
<b>Ilocos Sur:</b>	
Antipolo closets .....	582
Convention of sanitary inspectors.....	24
Inspection trip .....	650
<b>Iloilo:</b>	
Hookworm survey .....	318
Inspections .....	728
Public meeting .....	650
Indorsement .....	315
Inspección de los alimentos en los mercados.....	151a
Intestinal diseases among children.....	87a
Invocation .....	15a
Importancia de la standarización de las diferentes clases de ne- gocios de una ciudad bajo el punto de vista sanitario.....	701

<b>Laguna:</b>	<b>Page</b>
Adoption of Antipolo closet system.....	71
Outbreak of typhoid fever.....	651
Campaign against tiendas and bakeries.....	24
House-to-house inspection .....	148
<b>Lanao:</b>	
Antismallpox vaccination .....	71; 148; 651
Compensation of two datus.....	583
Voluntary contribution .....	22
Yaws campaign .....	432
<b>Malaria:</b>	
Board starts fight.....	433
Cases .....	60a
Destructive disease .....	574; 576
In the Philippines .....	69a
Inquiry and control in Mindanao and Sulu.....	281; 296
Parasite .....	34a
<b>Masbate:</b>	
Campaign against yaws .....	22; 432
Dysentery epidemic broke out.....	149; 365
Medios contra el contagio tuberculoso en los niños.....	712
<b>Mindoro:</b>	
Examination of school children.....	72; 149
Vaccinations campaign .....	22
<b>Misamis:</b>	
Classes of sanitary inspectors.....	72
Death of Chief Sanitary Inspector N. Raagas.....	651
Distribution of quinine.....	22
Hookworm campaign .....	149; 432
Miscellaneous .....	20; 68; 317; 361; 431; 535; 928
Most common antiberiberi vitamin containing foods.....	49a
<b>Mosquitoes:</b>	
Anopheles .....	267-268
Differential characters .....	267-280
<b>Notes:</b>	
Sanitation of sugar <i>Haciendas</i> .....	181-191
Malaria deaths .....	485-497
Paris green as larvicide .....	725-727
<b>Nueva Ecija:</b>	
Conference .....	22
Inspection .....	652
Investigation of beriberi .....	149
The site of a new incinerator.....	432; 728
<b>Nueva Vizcaya:</b>	
Cases of infants mortality.....	363
Health lectures .....	72
Hold free consultation and treatments.....	652
Inspection trip .....	22; 318; 365
Passing of ordinances, requiring food vendors to possess health certificate .....	432

	Page
Occidental Negros:	
Collection of lepers.....	318; 363; 728
Construction of leper detention camp.....	73
Health condition .....	149
Houses of lepers .....	22
Observation on the methods of leprosy treatment.....	172a
Object of Health Service.....	22a
Opening address Health Officers' Assembly, Baguio.....	18a
Pangasinan:	
Investigation as to the cause of malaria.....	23
Operation of traveling clinic of trachoma.....	583
Politics and public health officers.....	57
Problems:	
Misamis Public Hospital.....	572
Leprosy .....	200a
Program of the Health Officers' Second General Assembly.....	7a
Plague .....	366
Post-mortem findings in acute jelly-fish poisoning.....	479
Pozos sépticos .....	129
Preliminary differential characters of Philippine Anopheles mosquito larvae .....	267
Provincial hospitals .....	730
Purificación del agua.....	691
Remarks:	
Comparison of leprosy and tuberculosis.....	53; 56
Form No. 70 of the Philippine Health Service.....	619-627
The etiology and pathology of leprosy.....	723-724
Report:	
An unidentified microörganism.....	349
Case of bronchopneumonia without cough.....	687-690
Epidemic of Hiccup in a family.....	577-580
Typhoid situation in Manila during 1924.....	501-522
Resolutions:	
Committee on Cancer.....	19
No. 16, Health Officers' Second Assembly.....	5a; 211a; 228a
Rizal:	
Lecture of health condition.....	652
Fire broke out in Pasay.....	729
Romblon:	
Special training of all sanitary inspectors.....	73
Investigation .....	23
Sale of quinine by barrio school teacher.....	97a
Sanitary engineering and the new public health.....	101
School health notes.....	480
Second General Officers' Convention .....	13a
Sewage disposal of the City of Manila.....	125
Simple hood for use with binocular microscope.....	581
Smallpox .....	266
Some points to remember in time of disaster.....	573
Statistics .....	25; 49; 75; 97; 153; 211; 239; 231; 367; 435; 537; 585; 733

<b>Studies:</b>	<b>Page</b>
Profit from slumming .....	653
Tables showing infant mortality rate .....	472
Variations of the infant mortality .....	471
<b>Sulu:</b>	
Campaign for the breeding places of <i>Anopheles</i> mosquitoes .....	23
Construction of the dispensary building at Parang .....	365
Malaria control and survey work .....	150
The party of Vice-Governor-General .....	363
<b>Surigao:</b>	
Asking aid .....	23
Sporadic cases of amoebic dysentery .....	73
<b>Sorsogon:</b>	
Inspection trip .....	583
Lepers .....	652; 729
Treatment of patients in public dispensary .....	73
Survey of leper situation in various countries of the Far East .....	82a
<b>Tarlac:</b>	
Provincial Garden Day .....	23
<b>Tayabas:</b>	
How to prevent influenza .....	23
The anticholera campaign of 1926 in Mindoro .....	397
The common skin diseases among Filipinos .....	523
The engineer's part in malaria control .....	299
The health service and schools .....	730
The Islands are safe against cholera .....	731
The Manila Slums .....	617
The need of sketching your projects .....	107
The new school of public health .....	427
The objects and activity of the industrial hygiene section of the Philippine Health service .....	200
<b>Trachoma:</b>	
Control among the school children .....	60
Epidemic in Pangasinan .....	366
<b>Yaws:</b>	
Age and sex .....	629
Incubation and primary stage .....	630-632
<b>Zambales:</b>	
Inspection of the Camilla Simpson Hospital, Olongapo .....	365
Lectures on health .....	365
<b>Zamboanga:</b>	
Demonstration regarding the treatment of mosquito-breeding places .....	151
Inspection of coastwise vessels .....	729
Malaria control .....	23



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

JANUARY, 1928

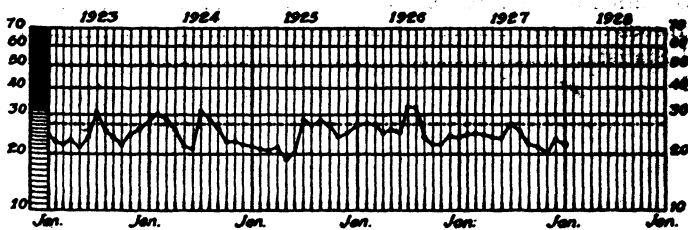
No. 1

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

"The fact that man is the chief source and reservoir of most of his own infections adds greatly to the scope and to the difficulties of public health work, and often makes the prevention of disease dependant upon social and economic changes."—Treadway, W. L.



ANNUAL DEATH RATES BY MONTH, CITY OF MANILA



—Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

---

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
LEONCIO LOPEZ-RIZAL M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
The Problem of Ventilation in the Tropics with Particular Reference to the Climatic Conditions of Manila, by M. MAÑOSA.....	3
Superstitions on Modern Treatment in Moroland, by Dr. RAMON SANTOS .....	18
Leper Situation in India, by Dr. JOSE RODRIGUEZ.....	22
Miscellaneous .....	24
General Statistics .....	31

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**JANUARY, 1928**

**No. 1**

**THE PROBLEM OF VENTILATION IN THE TROPICS WITH  
PARTICULAR REFERENCE TO THE CLIMATIC  
CONDITIONS OF MANILA <sup>1</sup>**

**By M. MAÑOSA**

*Sanitary Engineer, Philippine Health Service*

When I received the letter which your worthy President had written to me some time ago inviting me to prepare a paper on Sanitary Engineering for this meeting, my first intention was, I must confess, to decline by all means the honor he was conferring upon me in having the privilege of addressing the members of the Manila Medical Association. Unfortunately, however, some days afterwards I met him, I do not remember where, and he convinced me by his charming personality, his kind and benevolent talk and familiar tone, that I should appear here on this occasion to exchange ideas and impressions with the members of the Association on any matter that might be of common interest to the medical and to the engineering professions in the Islands.

Purposely I have selected the subject touching "The Problem of Ventilation in the Tropics," because I honestly believe that the physicians and engineers must be interested in it. With the present scientific knowledge about ventilation and on account of our particular geographical condition we may advanced the conclusion that the satisfactory and proper solution of such a

---

<sup>1</sup> Read before the Meeting of the Manila Medical Association on November 7, 1927.

problem as far as we are concerned depends principally upon the individuals who, when found under abnormal circumstances, are cared by, or at least, seek the counsels of the physicians. All motives considered, the science and practice of ventilation anywhere, as a last resort, are no more than efforts to protect human health and efficiency, which are the direct concern of the medical profession, the side issue of which, consisting of the procurement of comfort and convenience by artificial means, falling within the province and incumbency of the engineers. Historical facts and recent experiments have brought to light that shortcomings committed in the practice of ventilation have resulted and will result in the poor health and in lack of efficiency of human beings. Such being the case, we are called upon to improve existing unsatisfactory conditions. Now the possibility of improving anything increases only when more and more is known about its essential requirements, the necessities to which it is to be applied, and, if you wish, the defects of the thing to be improved. To invite attention of all to this subject, particularly the members of this Association, and also to ask the medical profession as a whole to devote some of their spare time in the study of this broad topic, for the purpose of determining a set of standard for the engineers to follow is what I had in mind when I gave your distinguished President, to whom I owe gratitude for this opportunity, my conformity to his kind invitation.

Probably the first thing that would come to your mind is the question of whether there is any problem of ventilation in the Tropics or not. It is true that not seldom we hear and read about means and ways employed in cold countries for the provision of adequate ventilation. We know that buildings in such countries had to be made up of certain materials and are designed in such a way as to meet the problems of ventilation. Also there the public as well as other large buildings have to be provided with complicated and expensive apparatuses to care for the needs and to meet the strict regulations of proper ventilation. However, we know also that even in these cold countries the great majority of the people do not pay special attention to ventilation until Winter comes. Nevertheless, and unfortunately for us, the answer to the question is affirmative; and under certain conditions the problem of ventilation in the Tropics is apparently of the worse kind as I will try to show later.

## VENTILATION AND ITS PURPOSES

There is no doubt that the word "ventilation" comes from the Latin word "Ventus-i" which means "wind" or air in motion and "Ventilus-as-are" to move, make or raise air, to fan. It has for object, according to Rosenau, "the furnishing a never ending stream of fresh air from the inexhaustible supply without to replace that which is constantly being 'vitiated.'" "Ventilation," this same well known author says, "must serve a number of purposes and comply with a number of conditions before it can be considered satisfactory: First, it must bring pure air from without in order to dilute and remove the products of respiration, as well as other sources of vitiation; Second, it must maintain the air within the room at a proper temperature and humidity, and, further, must keep the air of the room in gentle and continuous motion; third, it must remove the gases, odors, bacteria, dust, and other substances that contaminate the air of inclosed spaces; fourth, it must dilute and remove the impurities produced by the burning of the gas, candle, lamp, and other sources."

Such conditions and requirements embody all the necessary requisites demanded for a system of artificial ventilation as ordinarily practiced in cold climates. This gives an idea of the popular concept of modern ventilation. To determine as to what extent these principles may have application for our tropical conditions, it will probably be only necessary to relate even very concisely, the different stages thru which the theory of ventilation has passed.

## THEORIES OF VENTILATION

The early conception of ventilation must have appeared and run concurrently with that of the cause of disease which had its culmination when the miasmatic theory was in full fashion. To the gradual advancements in the art of construction a singular advantage must have been attributed to the purifying power of fires against the deleterious miasmas carried by the surrounding air. On account of this fact together with the continuous struggle of man to conquer his unfavorable environment during cold weather, artificial heating by means of open fires must have been introduced in the inhabited shelters as an ideal solution for the conservation and protection of health. This theory passed thru the middle ages and with very slight

variations reached up to the 18th century when the progressing science of chemistry claimed its share in elucidating or exploring the causes of certain common phenomenon of daily occurrences and of common observation taking place in the air and in inhabited places.

"Boyle, Hooke, Lower, Mayow, Priestly, and others," according to Rush, "had completed in the last part of the 17th century a good deal of experimental work on the atmosphere, some of which indicated that if small animals were placed in air-tight compartments they soon died. They also found that when one animal died and they then introduced a second animal into the same jar without changing the air in the jar, the second animal died within a shorter time than the first and their conclusion was that the air in the jar was no longer able to support life. The same experiment was repeated substituting for the animal a lighted candle and the result was summarized by saying that light and life were likewise extinguished." In the meantime, Black, Bergman, Cavendish, Scheele, Beddoes, Davy, and Lavoisier working on the chemistry of air had succeeded not only in determining the elements composing the air, but also in giving body to the second theory which was worked out and enunciated by Lavoisier in 1777. In this connection, Winslow says: "Lavoisier showed by animal experimentation that it is only when the pressure of oxygen falls from 21 per cent to 16 per cent the symptoms of badly ventilated rooms, could be attributed to oxygen deficiency." He expressed the belief that the toxic affect of  $\text{CO}_2$  was the chief cause of the evil effect. And this principle was held true by physiologist for approximately the next one hundred years although in 1842, according to Rush, "Le Blanc demonstrated that an animal could breathe air containing 30 per cent of the carbon dioxide for nearly an hour and recover when it was transferred to a normal atmosphere."

In 1863, Petenkofer enunciated the 3rd theory for adequate ventilation by stating: "Under ordinary conditions the increase of carbon dioxide was not any more responsible than the decrease of oxygen for the symptoms produced by a bad air because the actual quantitative changes in the constituents recorded in a poorly ventilated room were far below the level at which harmful effects were noted in laboratory experiments." He maintained," says Rush, "that the bad influence of air was due to the presence of organic substances excreted from the body

into the atmosphere." Brown, Sequard, and Darson-Val corroborated this theory and strengthened it by experiments.

Finally in 1883, Herman reported that "the effect of the air in occupied rooms was due not to the pestilential miasmas, nor to the increased amount of  $\text{CO}_2$ , neither to the existence of deleterious organic substance excreted, but that it was due to the excessive temperature and humidity of the air itself." This theory, the last and still the prevailing one, is known as the "Thermal theory." It has been confirmed and is still being corroborated in a very extensive, elaborate and carefully executed tests made by many modern investigators such as: Billings, Mitchell, Bergey, Flugge, Hill, Flack, McIntosh, Haldane, Benedict, Winslow, Yagloglou, and others. It explains quite satisfactorily the result of previous experiments upon which the older theories were based. In 1914, F. S. Lee said relative to this theory: "The physiological problem of ordinary ventilation has ceased to be chemical and pulmonary and has become physical and cutaneous."

For the sake of comprehension let us have an idea of some of the results obtained in the magnificent experiments by two of these great investigators:

The following was executed by Flugge:

He placed men in a closed cabinet and allowed them to breathe and rebreathe the air contained therein until they were very uncomfortable. He then introduced fresh air to them through tubes without changing the condition of the air that surrounded their bodies. They got no relief at all, although they were getting air which contained little carbon dioxide and about 21 per cent of oxygen. He then allowed men outside of the cabinet to breathe the air from within the cabinet through tubes while their bodies were surrounded by fresh outside air. They experienced no discomfort, although they were breathing the foul air of the cabinet which contained an excess of carbon dioxide and other expired impurities, as well as a decreased amount of oxygen.

And that conducted by Leonard Hill of England is as follows:

The experimental chamber, in this case, held approximately 3 cubic meters of air. In one class of experiments we shut within the chamber seven or eight students for about half an hour and observed the effect of the confined atmosphere upon them. We kept them therein until the carbon dioxide reached 3 to 4 per cent and the oxygen had fallen to from 17 to 16 per cent. The wet-bulb temperature rose meanwhile to about  $80^{\circ}$  to  $85^{\circ}$  F. and the dry-bulb a degree or two higher. The students went on chatting and laughing, but by and by as the temperature rose they ceased to talk and their faces became flushed and moist. We watched them trying to light a cigarette (to relieve the monotony of the experiment) and puzzled by their matches going out, borrowing others, only in vain.

They had not sensed the percentage of the diminution of oxygen, which fell below 17. Their breathing was slightly increased and depended by the high percentage of carbon dioxide, but no headache occurred in any of them from the short exposure to from 3 to 4 per cent carbon dioxide. Their discomfort was relieved to an astonishing extent by putting on the electric fans placed on the roof. Whilst the air was kept stirred the students were not affected by the oppressive atmosphere. They begged for the fans to be put on when they were out off. The same old stale air containing 3 to 4 per cent carbon dioxide and 16 to 17 per cent oxygen was whirled, but the movement of the air gave complete relief.

Still I would like to invite your attention to another interesting experiment conducted about 10 years ago only by the New York State Commission of Ventilation designed to test the effect upon the prevalence of respiratory disease, among school children of three different methods of ventilation.

The study covered 5,500 children in 134 classrooms and in 20 schools. The health of the children were closely followed for 20 weeks by a nurse assigned for the purpose. The classrooms were divided into 3 groups (a) rooms ventilated by window inlets and kept at a mean temperature of 59° F.; (b) room ventilated by window inlets and kept at mean temperature of 66.5° F.; and (c) rooms ventilated by mechanical means and kept at a mean temperature of 68.5° F. The fundamental difference between the 3 types of rooms was that in type (a) and (b) they used a low flow of cold air and in type (c) they used a high flow of warm air. When the records were studied it was found out that type (c) showed an 18 per cent excess of absences due to respiratory sickness and 70 per cent excess of respiratory sickness among pupils in attendance.

It seems conclusive in view of these findings, that the ill effect of inadequate ventilation is due primarily to the physical factors of excessive temperature, high humidity and immovility of the enveloping air, and not to the purity in the strict sense of the word, of the inhaled air. And that "freshness of air" decreases the prevalence of respiratory diseases. "Fresh air," according to Hill, "is that air that must be cool rather than warm; dry rather than damp; diverse in temperature rather than uniform and monotonous; moving rather than still."

#### **WHAT CHANGES TAKE PLACE IN THE AIR AND WHAT ARE THE EFFECTS OF THESE CHANGES**

In a gathering like the present an Engineer, I think, can not tell nothing interesting about the effect of an enveloping stagnant air with a high temperature and a high relative humidity upon the human organism. It is just enough to have in mind the fact that the greatest failure of the engineering profession not only in the past but also in the present times and without doubt still in the future, is their incompetency to form due



judgment upon, in spite of innumerable attempts to imitate with their material tools and means, the marvelous faculty of self-regulation, self-harmonization and self-excitement, the wonderful machine so familiar to you and which we all know as the animal body.

Leaving aside the problem presented by the dust and the bacterial pollution of the air which are also being now recognized as relatively important, because they could be easily put under control right at their very sources or minimized at the point of production, let us state what changes occur in the surrounding air when the physiological operations of respiration and transpiration or a normal man at rest take place. On occasion of several cases of collapses which occurred among a few employees in a government office in the city between 1922 and 1923, we came to believe that the changes which take place around an individual are as follows:

1. The elimination of heat by the human organism tends to increase the temperature of the surrounding air and laying immediately over the skin;

2. Such raise in temperature of the air is accompanied by a similar increase in its relative humidity because of the moisture eliminated by perspiration and respiration;

3. The combination of the said conditions, the increase of air temperature and humidity interferes with the normal rate of elimination of heat from the body. While the surrounding air approaches its point of saturation it makes the evaporation of moisture from the skin more difficult which results in a manifest sweating and a gradual increase in temperature of the skin due to its greater conductivity;

4. Because of the new abnormal external conditions, the skin in a supreme effort to restore equilibrium between heat production and heat elimination, opens its pores to enable the exposure of more blood on a greater area and thus make possible its cooling by direct contact to the exterior elements; but the saturated air, and now with still higher temperature at this stage, does not respond as desired. A general sensation of uneasiness and heaviness is felt;

5. As a last recourse the heart precipitate its pumping action to allow a more rapid contact to the abnormal peripheral work for cooling. It succeeds in doing it, but it deprives the organs and the brain of the much and never so more needed stream of blood. In this stage there are signs of dizziness, dullness and possibly of nausea; and finally,

6. The heart in a supreme effort to restore equilibrium beats still faster and stronger, but unfortunately at the expense of the brain and the organs. A feeling of general weariness and even dizziness comes to order and if this is endured the collapse may come.

How long does such a process take place? It is impossible to determine and much less to ascertain as it depends on the condition of the air and on the resistance of the individual. We know that there are persons more susceptible than others to such unfavorable environments. Furthermore, there is still the factor of acclimatization which makes that even a sane person may suffer different effect for two similar or equal conditions.

Summing up, we may say that during the first three stages the famous "aërial blanket" of Professor Segwick is formed and tends to isolate the human body and without any exterior manifestation, of the beneficial influence of the incommensurable spaces occupied by the free air. And that in the last three stages your perfect human machine, altho it shows splendidly an admirable functioning even when subjected to strange and completely abnormal conditions, fails to respond in extreme cases. It is needless to prove that the restoration of normal condition, or in other words, the elimination of the "aërial blanket" which is naturally accomplished by slight movement of the surrounding air, would eliminate the fatigue and overwork of the human mechanism.

Overton and Demo in regard to the matter said the following:

While human beings are adapted to live healthful lives amid the changes which naturally take place in the outdoor air, they are readily affected by some of the conditions which develop in the air of a closed room as the result of breathing and of fires. Air which has been inhaled or made foul by breathing and combustion, produces bad effects upon the body both immediately and also remotely. The immediate effects of dullness, oppressive breathing, headache, and general discomfort are almost exactly similar to those produced by warm air at a temperature near that of the body.

Relative to odors Rush says that:

There is an increase of partially oxidized organic matter which is given off from the body (chiefly from the skin, mouth and teeth) and which is of a nitrogenous nature. Among these substances are urea, certain aromatic fatty compounds and the like, which we recognize as the body odor and which is frequently noticeable in a gymnasium.

And relative to the tonic effect of fresh air Baker and Sprunt stated :

Fresh air is tonic and invigorating; vitiated air is enervating. The harmful effects of a vitiated atmosphere upon human beings may be divided into two general groups, the acute and the chronic. Among the acute effects are lassitude, headache, vertigo, nausea, collapse, and in extreme cases, even death. Much more important from the hygienic standpoint are the more common effects of chronic exposure to contaminated air upon the human constitution. Among them we may mention anaemia, depressed vitality, digestive disturbances, nutritional disturbances and lowered resistance to infection, with the ordinary pyogenic, or pus-forming bacteria, the tubercle bacillus, the pneumococcus, and the various organisms that are responsible for the ordinary respiratory infections that are so common in winter. Usually when bad ventilation exists there are other unfavorable influences also at work, so that it is difficult to evaluate precisely the harmfulness of any one of them. Considerable evidence has been adduced, however, to show that badly ventilated quarters have a distinctly deleterious effect upon men and lower animals.

#### THE USUAL PRACTICE OF VENTILATION

If the chief cause of bad air condition is "overheating" and the object of ventilation, as was stated hereinbefore and in accordance with Rosenau, is the furnishing of a never-ending stream of fresh air, which is equivalent to a "rather cool and rather dry moving air from the inexhaustible supply without," why is it, you may ask, that the science of ventilation, is practiced only in cold countries and even in these places provision therefor is given attention only during winter times? The answer is so obvious that explanation could very well be omitted.

The rather extremely adverse condition experience in cold countries in winter has made man, for the sake of defense, work not only to improve incessantly the construction of his shelter, but also to devise means and ways for his comfort and conveniences and those of his family. The provision of artificial ventilation in the manner indicated by Prof. Rosenau and quoted in the beginning of this paper has given a sure and steady solution to it. Although at present, abroad, there seems to be a little disagreement between the Sanitarians and the Engineers as to how could it be best accomplished, the object sought remains the same, that is, to make atmospheric conditions indoors similar to those outdoors, of an ideal spring day, or, as we may say it, an ideal day in December in the Tropics. To accomplish this end he utilizes "radiators" to heat his rooms or else he introduces into the rooms exterior air which has been previously

heated, or without heating if in small quantities, or he makes the combination of the two systems. To determine as to what degree this artificial means should be used, charts as the one represented in Figure 1 have been devised which shows a zone of comfort for ordinary conditions which anyone, more or less, knows how to attain. In Figure 1, we have plotted for visualization the maximum and the minimum temperatures and relative humidities of the City of Manila. The average conditions for both, temperatures and humidities, must necessarily fall in the space right between the two corresponding points. A mere glance will enable everybody to compare the conditions to be obtained by artificial ventilation in cold countries with those of the outside air in the Tropics and which is meant when we speak of natural ventilation of houses. This chart also shows the need of another set of standards to meet the conditions in the Tropics. Conditions in Summer in cold countries are, however, somewhat different. They are ordinarily termed "bearable." It is true that the temperature of the air in this season is high, but its relative humidity is comparatively low and its motility under an average condition is not entirely inadequate. Notwithstanding this, lately a few commercial and public buildings have installed cooling devices resembling those utilized for heating purposes during Winter in order to cool up the hot Summer air from the outside. These devices must have worked satisfactorily because of the air tight system construction of buildings there, but it is claimed that they are much more expensive to operate.

#### THE TROPICAL ENVIRONMENT

Conditions in the Tropics, as you well know, are entirely different from those of cold countries. Our weather seasons are known to be only those of wet and dry; our system of construction is wide open to the external atmosphere; and our climate is characterized by its high temperature, high relative humidity and at certain times of the day throughout the whole year ordinarily the air is completely still or stagnant.

Taking into account the circumstances hereinbefore stated, it seems but natural that at times we should talk about poor ventilation. How frequent we meet a friend or come across with someone complaining of the bad ventilation of the house where he lives! How often we read reports of officials stating that such a house is improperly or inadequately ventilated! Again, that a certain building which has a floor height little

less than that required by regulations is insanitary because of inadequate ventilation, or else that a house which is a little higher than another is much better ventilated!

What do we mean by ventilation when we talk in this manner? Do we refer to natural ventilation? It has been proven and demonstrated by experiments that the chief requirement of proper ventilation is the adequate conditioning of the air surrounding or immediately adjoining the body. How can we improve or provide a good ventilation for our open houses if we do not make any attempt to cool up the stagnant hot air surrounding us or that of the whole city or else to reduce the humidity content of it, or set it in motion, that is, at least the atmosphere that envelopes our bodies? Whatever method we might choose to adopt, with the exception of that "to move directly the air surrounding us" will require the radical change of our system of building construction into one of air-tight, that is, to adopt entirely the opposite thing of what it is intended to do when we complain about bad ventilation. We cannot depend, at all, on the diffusion of the expired air and that of the air in direct contact or immediately enveloping the skin, to that of the next surrounding layers, on which the theory of natural ventilation is based, because this diffusion is very insignificant and is proven to be absolutely insufficient in calm days. Professor Winslow said that "during Summer the whole world may be considered to be badly ventilated." But our Summer condition is much more prolonged than that experienced by the cold countries, and the worst of it is that in our eagerness to modernize ourselves and our surroundings we are unconsciously and automatically aggravating this tropical long summer conditions; and we do this when we are proscribing the use of nipa and we foment the use of iron and other good heat conducting material; when we are reducing the sizes of our homes, but no effort is made to separate one from another; when we are economizing thickness of walls while we spend more in ornamentation and decoration; when without widening the streets we are elevating our building; when we asphalt and concrete the surfaces of our streets while we forget to plant trees along them; when we exchange decisively our "papags" or "lancares" for soft mattresses and easy "somiers;" when we are occidentalizing our habits and manners by hurrying things, wearing heavy clothing, and trying to live faster, etc. In other words, we are exercising all possible efforts to produce or add heat to our actions and environments without the least procurement to mitigate, ameliorate, or coun-

teract it by some other available means. Should this question not involve a health matter there would be nothing to worry about. But unfortunately, it does.

As a mere conjecture that springs from this, permit me to mention the typical and prominent prevalence of the two important seasonal diseases in the Tropics: gastro-intestinal during the rainy months (July, August, September, and October) and respiratory diseases during the cool months (November, December, January, and February). No special pronouncement is made during the hot remaining months, as I am not an authority for it and I make no mention either of other diseases of well known seasonal periodicity, for instance, malaria, etc. It is possible that the hot season (March, April, May, and June) has, as pointed out, a depressing and weakening effect upon the system with its peripheral circulation which tends to predispose the human organism to the slightest infection. Because of the oppressive conditions within the premises everybody procures to stay out in the open air and in the shady fields, which in turn receive a contribution of organic animal pollution. Then comes the rainy or markedly wet season (July, August, September, and October) which drives out the infested insects from the fields toward the habitations, and at the same time carries thru the wash-out of the heavy rains the above mentioned ground pollution into the nearby wells, streams or other sources of water supply. Our already susceptible and weakened human organism after the hot spell, becomes an easy prey to this invasion, and in such a case, one who acquires a gastro-intestinal disease, although he may resist it, nevertheless becomes more weakened in his system and thus more predisposed and sensible to any external action. Then comes our relatively cold months (November, December, January, and February) which are made still cooler on account of their very high relative humidity, and so our feeble and extremely sensible man suffers on account of the undesirable combination of a cool atmosphere with open construction and chiefly of the still cooler nights. And on account of this he wraps himself with clothing, closes tight his doors and windows excluding the all mighty fresh air so essential for his invigoration, until the next day when the shady and gloomy morning will drive him out from his clue; and so on until he strikes a real bright sunny day which will not make him wait long either, where every thing is bright,

warm with a quite atmosphere, then, our so well wrapped and protected human organism will feel oppressed. To ameliorate this condition one will be compelled to take out some of the tight garments, just to receive a nice cold which automatically takes him into the region of the respiratory disease. I do not believe that a victim should necessarily follow the cycle. I think he could very well jump from the first to the third stage and still get the same result.

#### WHAT TO DO IN HOT SEASON

For those who have the means an easy and most satisfactory solution would be either to escape from the overheated place and go to summer resorts, such as Baguio, or else to recur to the easy use of an electric fan. This is why in the beginning of this paper we stated that the proper solution of bad ventilation in the Tropics rested primarily on the individuals. But how about those that can not afford to adopt any of the above remedies? Are we going to keep ourselves indifferent to their suffering and exposure to apparently greater dangers? No doubt that an adequate orientation of the building and what is more important the proper arrangement of the room or a suitable distribution, together with the avoidance of the sun's direct radiation either by the use of heat resisting materials or by interposing barriers, such as that afforded by vegetation, will do a great deal to mitigate undue overheating within the premises for a good part of the year. As an illustration of the period of inadequate ventilation or when ventilation is wanting in this City let us quote the following weather information obtained from the magnificent reports of our Weather Bureau:

*Longest periods of Consecutive days with maximum temperature of 36° C or more at Manila.*—The number of consecutive days with very high maximum temperature is one of the data most interesting in the description of any climate. The short time at our disposal for the preparation of this report, prevents us from giving at present such information for other stations but Manila. As the periods of drought in the Philippines generally occur during the hottest periods of very high temperatures are to be looked for in the periods of the most extraordinary droughts. During the severe drought of 1912, no less than 27 times the daily maximum temperature was 36° C. or more, the hot spell of 16 consecutive throughout the year and the mean lowest temperature is considerably greater in the Philippines than the difference between the mean temperature of the warmest month of the year and that of the coldest month. In other words, the mean diurnal range of temperature is much greater here than the mean annual range.

*Relative humidity is high in the Philippines.*—That there is a very great amount of water vapor in the atmosphere of the Philippine Islands will be clearly seen from the data which will be presently given. This quantity of vapor is due to the extraordinary evaporation from the seas that surround them on all sides, to the richness of their vegetation, to the different prevailing winds in the different seasons of the year, and finally to the abundant rains so proper of a tropical country.

*Mean hourly relating humidity for Manila.*—There is only a single daily oscillation, altogether opposite to the daily temperature oscillation the minimum occurring during the early hours of the afternoon, and the maximum in the early morning. The annual mean daily range is 24.4, it being smaller in the summer months when the temperature oscillation is also smaller, and greater in the months of February to April, when the temperature range is likewise greater. The semiannual daily range is 27.8 for the period of November to May, and 19.8 for the period of June to October.

*Winds.*—Both the wind velocity and the frequency of the different wind directions are considered as important climatic factors. It is to be regretted that we cannot give at present more complete information concerning these elements . . .

"El Archipiélago Filipino," by the Jesuit Fathers, Vol. II, p. 136, states the following:

"De la simple vista de estos datos se deducen consecuencias importantísimas que vamos a insinuar con la mayor bravedad y claridad posible:

1. La calmas o vientos más calmosos predominan durante todos los meses en las horas de la noche; su máxima frecuencia corresponde a las 6 ó 7 a. m. y más comúnmente a las 7 a. m. a excepción de los meses de noviembre y diciembre, en los cuales observamos mayor numero de calmas a las 9 de la noche.

2. La mínima frecuencia de calmas se nota en los alrededores de mediodía, o en otros términos en las horas de mayor calor, etc.

An analysis of our weather charts discloses the fact that during the hot and driest season (March, April, May, and June) artificial ventilation is most wanting. Figure 2 shows graphically the mean annual effective insolation and normal precipitation and the average annual hourly variations of temperature, relative humidity and air velocity in Manila. It will be noted from the lower diagram that although the temperatures at noon reach their apex the relative humidity drops down to its lowest ebb and the wind velocities are at their greatest intensities. And at night, especially early in the morning, is when normal condition needs some sort of artificial relief. But yet, as everybody is at rest at this critical lapse of time, it generally passes unnoticed to many.

In view of these conditions, the advice followed in India and other Tropical Countries that the premises be closed during the



day to exclude the hot air outside and then to move or set it in motion the air within or inside, is not acceptable here and I think we should do just to contrary, that is, we should open wide our windows in order to take advantage of the natural air velocity from the outside air or regular breezes and leave our prolific vegetation and our numerous water surfaces do the cooling action. And if the above combination fails, then we should adopt artificial means such as the use of fans.

Taking for granted that inadequate ventilation occasionally has a harmful effect upon the health of the individuals, may I be permitted to bring to the attention of the members of the Manila Medical Association that the time has come to start a study on this important problem considering our particular local condition, idiosyncrasies and individualities with a view of finding with more certainty its evil effects, if any? The Office of Sanitary Engineering has for some time now devoted its spare working hours in making field observations, with a view of ascertaining the amount of heat protection or otherwise afforded by a few of our types of house construction. Could the medical profession do its share by correlating the incidence of disease, at least, of those that could be attributed to lack of adequate air conditioning, and with the types of building construction? The idea is to unite both results and fix some sort of standard to cope with the conditions in the Tropics. In our opinion, there is no need of costly experimentation or embarking in expenses such as are incurred for a considerable laboratory undertaking; just a judicious analysis of the frequencies and causations of the cases, keen observation of the environmental conditions and study of our splendid and thorough weather reports. The existing provisions of the Ordinances are based on the volumetric capacity of rooms and natural ventilation which as we have seen is entirely inadequate and does not meet the recent findings. I thank you.

#### REFERENCES

1. "Fresh Air and Ventilation," by C. E. WINSLOW
2. "Ventilation Standard and the Synthetic Air Charts," Dr. E. V. HILL (J.A.S.H. & V. E.).
3. "Rational basis for ventilation," by J. E. RUSH (J.A.S.H. & V.E.).
4. "Brief Discussion of Modern Views of Ventilation," Lt. Com. R. F. JONES, U. S. N.

## SUPERSTITIONS ON MODERN TREATMENT IN MOROLAND?

By RAMON SANTOS, A.B., M.D.

*Resident Physician, Lanao Public Hospital*

Tucked away in the middle of Mindanao lies a vast territory of virgin lands, in the center of which is a picturesque lake. This is the Province of Lanao, inhabited along the seacoasts by christian settlers and in the interior by mohammedans with rude and fanatic customs. These non-Christian people are chiefly of the peasant type and are called maranaos or, commonly, Moros. In Christian provinces little is known of this part of the country except tales of uprisings and blood-shed.

This article is an exposition of the attitude of these people towards the hospital and the hardships met by a hospital physician in dealing with them.

Hospital development and management in Lanao differ considerably from those in the municipalities of the Christian provinces. In the Christian provinces with modern conditions of living and an educated community, the hospital conform, in most essentials, to the administration obtaining in the cities.

While the Christian communities have made gigantic strides towards civilization, the Moroland has not yet awakened from its period of lethargy.

In the Christian municipalities, the people have some understanding of modern methods of treatment and appliances, while the Maranaos, with very few exceptions, do not as yet possess the faintest knowledge of the ordinary usage of modern conveniences, such as toilet, bathroom, or even door knob.

Lanao, being mainly composed of rural districts, 90 per cent of its non-Christian people are still illiterate agriculturists and poor. Hospital work in Moroland is as hazardous as the missionary work; tact and patience is always used in dealing with these people so as to gain their sympathy and confidence. To enlighten the Maranaos on the blessings derived from modern medical treatment is the hardest part of our work, for it is extremely strange to them, and it will take long time before we can free them from the grip of antiquity.

Ignorance, superstitions, religion, and dislike for Christians are still a formidable obstacle to modern medical treatment, whether in the hospital or in the home. These facts contribute seriously to the difficulties in attracting these people to the hospital, as may be seen from the fact that despite the 15 years of existence of this charitable institution, the Maranaos admitted to the hospital constitute but only 20 per cent of the total admission, the rest being Christians. The heterogeneity of patients admitted, with varying customs and habits, is a source of difficulty in running the hospital efficiently.

On the other hand, the hospital is a powerful educative force in leveling the obstacles and in spreading common knowledge concerning modern medicine and surgery. The hospital is gradually overcoming the antipathy to Christians and religious prejudice, a fact which in turn is progressively lessening difficulties of hospital management. That we are advancing, although slowly, in our task cannot be denied. As an illustration of this fact, the Maranaos admitted to the hospital and the surgical operations performed on these people are increasing every year, but many years, probably a generation, will be necessary before we can boast that our sacred task has come to a perfect end.

The Maranaos decline any form of animal food as it is prohibited in the Koran. Their ordinary food is devoid of the elements essential to the proper nourishment of a person. This deficiency in proteids, we might be let to think, would lessen the power to resist diseased conditions; but I have observed that they are resistant to diseases, especially the males. There is something curious I met here. These people can withstand the greatest amount of pain without a murmur. I have witnessed moros severely injured and have operated on them almost without anæsthesia and I find reason to marvel at their power of endurance—their ability to undergo operation without qualm.

A very discouraging feature on the professional side of our work is the inability of the majority of the Maranaos to give a concise or intelligent history of their ailments, often making a diagnosis of the most obscure diseases; one requiring for elucidation and intimate knowledge of their language, habits, and customs. The intelligent coöperation of our patients is another factor very difficult of attainment, because of their ignorance or at times, sheer obstinacy. The self interest com-

manding coöperation, common to educated patients, is often conspicuous by its absence among these fanatic people. He expects you to look at him, examine him a little, and make a diagnosis of his malady, and he is usually satisfied with the simple effort on your part if, perchance, you are contended with such deficiency.

Still another great barrier to be overcome in estimating the efficiency of our hospital service is the impossibility of securing reliable information concerning end results of hospital treatment. This is obviously the result of illiteracy. Under existing conditions it is quite impossible to secure any reliable end results in more than 5 per cent of the cases.

A curious incident which illustrates the character of these people, happened one day when I went out for a visit to a Moro home. I was not allowed to get in because there was no male in the house at that time. This unreasonable delicacy of the Moros and the shyness of the Moras constitute a hindrance in attracting the Moras to the hospital. As a matter of fact, few Moras seek admission and they are always accompanied by their husbands and relatives. They reject any form of obstetrical and gynecological treatment even if the lives of the sick ones are jeopardize. Since the opening of hospital in 1914, only recently I attended a case of abortion and a delivery among the Moras. These are the first fruits gathered after 15 years of hard toil. Even the wives of our Moro laborers follow this custom despite all efforts to convince them and their husbands. This difficulty is quite hard to overcome and it will take many years of educational effort before we can completely surmount it.

Still another handicap in efficient hospital administration is the objection of these people to enter the hospital unattended by relatives, and whenever they are admitted they have the troublesome desire of occupying a room, so that their relatives and servants can stay with them. This is due to their antipathy to Christians who constitute the majority of the ward patients.

The unavoidable attendance of relatives and servants is a persistent source of worry to the nurse trained to obey orders and to maintain tidiness and cleanliness. The nursing staff has to be continuously on the alert for the clandestine breakage of orders is of frequent occurrence. For instance, ordinary food will be given to dysenteric cases even in the face of the doctor's protest. To prevent the bedside table and the floor from being filled with filthy clothing, bettle-nut, buyu, and sputum, the nurse has to be in a state of constant vigilance.

The question of performing autopsy to verify clinical diagnosis or for medico-legal purposes, is often a source of trouble. They believe that the soul of outopsied body will not go to heaven, so they emphatically refuse post-mortem examination.

The out-patient service can hardly be run efficiently. The Maranaos have the habit of asking medicines for their sick relatives or friends without bringing the patients for consultation. This fact is detrimental to the good name already gained by the hospital for proper treatment not being given, their maladies are not cured nor relieved.

It is believed that the opening of roads across the country and the pacification of recalcitrant Moros will greatly aid us in inculcating in these people the benefits of modern medicine and surgery.

This, is a nutshell, is the condition existing in Moroland.

## LEPER SITUATION IN INDIA

By Dr. JOSE RODRIGUEZ

Most of my time has been spent so far in the laboratory and clinic of Doctor Muir, and only two of the larger asylums have been visited by me. However, I have tried my best to study the situation here and have interviewed most of the men in charge of leprosy work.

1. *Number of lepers in India.*—According to the last census of India (1921) there were over 102,313 known lepers in all the provinces, or an incident of 0.32 per thousand. But all authorities are unanimous in declaring that the actual number is much larger than this figure, and some authorities claim that 500,000 (Rogers) or 1,000,000 (Muir) is probably nearer right.

2. *The "India Leper Act" and Leper Segregation.*—As the Act as reformed in 1920 is given in the back of Rogers and Muir's book, Leprosy, which is available there, I will not endeavor to describe it fully in this letter. Suffice it to say that it provides for the compulsory segregation of all pauper lepers and further rules that no leper should be allowed to engage in such occupations as cooks, bakers, vendors of foodstuffs, barbers, etc.: But the law is ignored everywhere and every City is overrun with begging lepers in the streets, and many leper barbers, shopkeepers, drivers are to be seen every where. In Calcutta alone there are supposed to be over 1,000 pauper lepers begging and living in the streets. There are only 150 beds in the asylum for the entire Province of Bengal, which has Calcutta for its Capital, with a total population of 46,000,000 souls!

According to Mr. Donald Miller Secretary of the Mission to lepers, of the 102,500 known lepers in India, less than 100 are in the asylums under the Leper Act.

So the Act is a failure and is but a myth. The causes for its failure are (1) the government has not, and does not desire to provide for, the funds for their segregation and (2) public opinion is entirely against it.

3. *Leper asylums.*—There are a very few poor and small asylums, in some of the provinces under exclusive government control. The management of the principal asylums in India is chiefly in the hands of the "Mission to Lepers" a semi-public and semi-religious organization. The mission, however, has not field personnel except one secretary for India and depends for

the management of the asylums under its control or honorary superintendents who invariably a missionary engaged in Evangelical work in the locality. These honorary superintendents receive no pay. The medical personnel consists either of missionary doctors or health officials assigned to the work by the provincial government. The asylums are maintained jointly by the mission lepers and the provincial government. In some cases, the government pays for one-half of the expenses, in others one-third or only one-fourth.

During the year 1925, the mission had 36 leper asylums directly under it, besides 15 others which were aided by small grants only, making a total of 51 asylums under its influence in India alone. It has also a number of asylums in China, Korea, and Japan; in Cullion, it helps Pastor Jauseu a bit. The total populations of these asylums in India alone was 5,428 lepers and 705 "untainted" children. Its income during the year (consisting of grants and subscriptions) totaled 75,968 pounds, and gross expenses, 72,409 pounds.

4. *Lepers dispensaries.*—The first dispensary was established since five years ago by Doctor Muir at Calcutta, in connection with the school of tropical medicine. Since that time, 750 patients have been registered in the clinic, and of these number, some 140 come twice a week with some regularity. There are two other dispensaries in Calcutta, one was opened only a few days ago, and the other is attended by some 40 patients.

A few of the leper asylums in the various provinces under the Mission have dispensaries for outside patients.

5. *Present Activities of the government.*—These activities are insignificant in comparison with the magnitude of the people. They consist of: (a) Sending a few public health physicians, (some 30 every year) to Doctor Muir's laboratory and clinic for two weeks' intensive training in leprosy. (b) Leprosy surveys are being conducted in a few regions, specially in the province of Assam. (c) As already mentioned under No. "3" (leper asylums) the government defrays part of the expenses of the larger asylums under the "Mission to Lepers," altho some provinces hardly give any aid at all, and all the expenses are borne by the Missionary bodies.

Such, in the farthest detail, is the situation here, and as will be perceived, is not particularly bright. I am at present taking extra work under Major Acton in skin diseases; this will help me in the Cebu job.

[NOTE.—Dr. Jose Rodriguez was sent as a pensionado to India.]

## MISCELLANEOUS

---

### ABRA

Due to the increasing number of dysentery cases, the district health officer has requested the provincial governor and treasurer to establish an Emergency Hospital. All known cases were brought to this hospital and houses where cases have occurred were disinfected. Injections with anti-dysenteric vaccine were given to contracts. Educational lectures were also given. After a lapse of three weeks, the situation was controlled.

### AGUSAN

Important activities accomplished: the personnel performed the usual work of inspection, dispensary work, vaccination, and malaria control. During the month one sanitary inspector was sent to municipal districts for a yaws campaign. All the districts of the provincial division of Wawa-Ojot have been visited and over 100 cases of yaws were duly treated. Influenza was present in epidemic form almost all over the district with very low mortality. Propaganda regarding the prevention of the disease in Cabadbaran and the house-to-house inspection by the sanitary personnel in Butuan were conducted.

### ANTIQUE

The general health condition of the province was fair. Influenza was reported from San Jose and Pandan. There was a slight increase of the incidence of diarrhea throughout the province.

### BATANGAS

The general health condition of the district was excellent. The infant mortality rate was 146.29 as against 117.48 for December.

### CAMARINES NORTE

The general health condition of the province during the month was good. Cases of dysentery were, however, reported in the different barrios of Paracale. The sanitary president of the locality was duly advised to take immediate steps for its prevention.

### CEBU

The annual conference of all the presidents of sanitary divisions was held during the month. Matters of great importance affecting the sanitary conditions of municipalities were thoroughly discussed. The lecture of Dr. Jose Rodriguez on leprosy and skin diseases with practical demonstrations, was undoubtedly of great help to all health officers present. One of the main objects of this conference was to carry into effect the idea



sponsored by the district health officer to have all presidents of sanitary division continue giving free injections with ethil ester to paroled lepers, in different municipalities of the province. This will give these poor patients an opportunity to receive continuous treatment without incurring in the unnecessary expense of going to the capital.

Influenza was present in mild form.

### LAGUNA

Malaria treatment campaigns were conducted in Mabitac and Siniloan. A malarial demonstration was conducted in connection with the Garden Day celebration at Santa Cruz. The Municipal Council of San Pablo appropriated the sum of ₱2,000 for the purchase of a motor truck to be used in transporting slaughtered animal from the new slaughterhouse to the market.

### ORIENTAL NEGROS

The inspection of restaurants, hotels, bakeries, tiendas, market, and slaughterhouse of Dumaguete was conducted. The municipalities of Bais, Luzuriaga, Bacong, Sibulan, Siaton, and Ayuquitan were likewise inspected. The hotels and tiendas inspected were in fairly good sanitary condition. All were provided with equipments to boil the plates and spoons after being used by customers. The campaign against loose pigs was carried out satisfactorily. The making of *apa* with toys inside was prohibited.

### ROMBLON

During the early part of the month, a slight epidemic of dysentery broke out in San Fernando, but it only lasted for a brief period. The town fiesta of Romblon was celebrated on January 15, and on this date a general clean up of the *población* was conducted.

Low lands in the district of Suba, in the municipality of Romblon, was filled up. A general cleaning up of the *población* of Romblon, especially of the estero which crosses the heart of the town, the public market, and private premises, was conducted.

During the convention of municipal treasurers which was held in the capital, the district health officer gave a talk regarding the rôle of municipal treasurers in relation to public health. An increase of the actual contribution given by municipalities to the health fund was emphasized.

The campaign against stray pigs was conducted at midnight, because people used to let them loose at night.

### TAYABAS

The dysentery situation during the month was as follows: Atimonan 7-1, Guinayangan 4-0, Lucban 3-1, and Calawag 1-0; diphtheria: Lucban 1-0 and Lucena 1-0; measles: Atimonan 13-1, Lucena 2-0, Sariaya 1-0, and Tayabas 6-0.

### HEALTH CHIEF ORDERS PROBE OF FACTORIES

Acting on the tip given by a story published in a local paper regarding the presence of saccharin, a poisonous substance in soft drinks manufac-

tured by some local factories, a physician in the employ of the Government made a chemical analysis of a bottle of lemonade of cheap make. The analysis revealed the presence of saccharin.

Saccharin is much cheaper than sugar as three centigrams of saccharin is equivalent to 15 grams of sugar in sweetening a given amount of water.

#### MALARIA TASK IS COMPLETED

Malaria in Novaliches, Rizal, at one time the worst infected place in the country, is now under control.

According to report received only very few old cases remain to be cured. Although a good amount of quinine, Paris green, and instruments were used there, it is believed that the money expended has been a good investment.

During the last half of 1926 and the first three quarters of 1927, Novaliches was so hard hit by malaria that the construction of the Novaliches metropolitan water district dam and reservoir was delayed. The contract of the builders of these projects had to be extended one year by the Government because of the disease. A separate and distinct malaria unit had to be established in Novaliches for the same purpose.

#### PHILIPPINE HEALTH SERVICE

##### MANILA

CIRCULAR No. 244

DECEMBER 31, 1927

**Subject: Supervision of Anti-Smallpox Vaccination and certification of the Report**

1. It has been noted that during the past few months the Monthly Reports of Vaccination against Smallpox (Municipal Form No. 15) have been, and up to the present are being, submitted without having been properly checked up and supervised. Had the submission of these reports been properly supervised, some of the deficiencies therein found could have been easily detected or corrected by the superior officer concerned. The most important and notable deficiencies observed, are hereunder enumerated.

(a) The total number of vaccinations is identical to the number of inspections. In some instances these vaccinations correspond exactly with the total units of vaccine virus issued and received by the officers and employees concerned. While such reports appear rather commendable as they show a very marked activity of the personnel, yet, because of the highest degree of efficiency which they represent, it is hard to accept such activity without arousing suspicions that the figures reported are fictitious and unreliable.

(b) The vaccination of newly born babies and children under one year of age as well as the other group of population constituting the non-immune people against smallpox had been partly neglected. On the other hand, the vaccination of people with previous positive vaccination is, in many cases, given preferential attention due probably to the accessibility and easiness of performing vaccinations on them. This practice is improper. It should be borne in mind that unvaccinated babies and children

are the persons who are easily susceptible to infection or contagion and are the ones that might serve as a source in the spread of the disease.

(c) The vaccine virus is being kept in stock for a long time, when it is well known that fresh vaccine virus, after it has been removed from the ice box, loses its potency after three weeks, and the glycerinated dry vaccine after three months. The statement at the back of the form showing how the vaccine virus has been disposed of is not properly filled up. All the columns shown thereon should and must be scrupulously filled up.

(d) The submission of the report is much delayed in contravention of the provisions of Service Circular No. Q-14, dated February 25, 1918.

2. In view of the foregoing statements, this office entertains the belief that district health officers are not giving the necessary attention to vaccinations, otherwise they could have noticed such glaring irregularities. This shortcoming can not be tolerated and should be remedied at once. To permit the submission of inaccurate reports would certainly redound to the disadvantage or inefficiency of the officers or personnel concerned. Besides, the main purpose of conferring the highest degree of immunity upon the people through systematic vaccination, as outlined in Service Circulars U-58 and V-41, will not be attained. It must be borne in mind that this office, realizing that some district health officers are not in a position to undertake and shoulder alone this task, has purposely created Insular Vaccinating Parties which are assigned periodically in different provinces. In provinces where these vaccinators are directed to operate, however, it is incumbent upon district health officers to contribute their share for the complete success of the work. But, it is sad to state, some of them, instead of working for the desired goal, demonstrate lack of necessary interest, as evidenced by the fact that the reports submitted to this office are not properly supervised and revised.

3. All concerned, especially district health officers, presidents of sanitary divisions and chiefs of vaccinating parties are, therefore, directed to verify and supervise the field work of subordinate personnel and to check up closely their reports before submitting to this office. If this is done, it will surely prevent any attempt of subordinate personnel to render falsified vaccination reports, thereby enabling the corresponding district health officers to determine the true status of vaccination work in their respective districts. With this end in view, it is directed that effective January 1, 1928, all Monthly Reports of Vaccination, Municipal Form No. 15, shall contain the following certificate to be typewritten at the bottom of the front page of the above cited form, below the statement of vaccine virus:

"I hereby certified on my honor that this report has been thoroughly and carefully checked and revised personally by me and that the data and totals contained therein are correct, in accordance with the records which are on file in this office and for which I am holding myself officially and personally responsible.

".....  
"(Signature)

".....  
"(Official title)"

4. In the work of vaccination and in the preparation of reports, the following points should be borne in mind:

(a) Special and particular attention should be paid to the vaccination of newly born babies, children under one year of age, and all the other groups of population without previous positive vaccination.

(b) Vaccine virus, either fresh or dry, should be distributed and used as soon as received or immediately thereafter, to avoid deterioration. The low percentage of positive vaccinations in some instances is mainly due to the fact that the vaccine virus is used after its potency has been lost.

(c) No column at the back of Municipal Form No. 15 should be left unfilled, and another two columns should be added for the dry and fresh vaccine, similar to the other columns provided for placing the balance carried forward from previous month. These columns will be inserted between "municipalities" and "vaccine virus sent."

(d) The different municipalities in a province should be arranged alphabetically.

(e) The vaccination report must be submitted within the period prescribed in Service Circular Q-14, dated February 25, 1918.

5. District health officers are held responsible for the status of vaccination work in their respective districts. Any indifference on their part toward this work, and any irregularity committed in the preparation of reports will be charged against their efficiency. As much as practicable and as far as the local conditions would permit without interfering with the peace and order in a barrio, municipality or province, the provisions of the law regarding public vaccination should be enforced. In case there are causes or obstacles that may hinder the vaccination campaign, report thereof should be made to this office.

JACOBO FAJARDO

*Director of Health*

# PHILIPPINE HEALTH SERVICE MANILA

## LIST OF DISTRICT HEALTH OFFICERS

(Effective January 6, 1928)

Province	District No.	District Health Officer	Rank *	Headquarters
Abra	5	Dr. Silvino R. Alberto	S	Bangued.
Agusan	41	Dr. Vicente de la Serna	SS	Butuan.
Albay	26	Dr. Shannon Richmond	SS	Legaspi.
Antique	34	Dr. Leopoldo Fuentes	S	San Jose.
Bataan	16	Dr. Salvador Martinez	S	Balanga.
Batanes	1	Dr. Pedro J. Alvarado	S	Basco.
Batangas	29	Dr. Victorino de los Santos	SMI	Butangas.
Bohol	38	Dr. Hipolito Balon (Actg.)	S	Tagbilaran.
Bukidnon	2	Dr. Flaviano Medalle	S	Malaybalay.
Bulacan	15	Dr. Juan S. Fernando	SMI	Maloja.
Cagayan	7	Dr. Teodoro Dychitan	SS	Tuguegarao.
Camarines Norte	24	Dr. Fernando Soberano	S	Daet.
Camarines Sur	25	Dr. Jose A. Vidal	MI	Naga.
Capiz	32	Dr. Trinidad L. Yusay	S	Capiz.
Cavite	18	Dr. Alfonso Raquel	MI	Cavite.
Cebu	35	Dr. Marcos J. Corpus	MI	Cebu.
Cotabato	47	Dr. Cresenciano H. Deles	S	Cotabato.
Davao	46	Dr. Eugenio S. de Jesus	MI	Davao.
Ilocos Norte	3	Dr. Francisco A. Tolentino	MI	Laoag.
Ilocos Sur	4	Dr. Andres Baltazar	SS	Vigan.
Iloilo	33	Dr. Jose M. Raymundo	SMI	Iloilo.
Isabela	8	Dr. Jose G. Valdez (Actg.)	S	Ilagan.
La Union	6	Dr. Francisco Velez	MI	San Fernando
Laguna	19	Dr. Vicente Rivera Sayo	SMI	Santa Cruz.
Lanao	43	Dr. Pablo S. Hamoy (Actg.)	SS	Dansalan.
Leyte	31	Dr. Pacifico Laygo	SMI	Tacloban.
Marinduque	22	Dr. Jose Alaras (Actg.)	S	Boac.
Masbate	28	Dr. Faustino Estella	S	Masbate.
Mindoro	23	Dr. Clemente M. Madarang	S	Calapan.
Misamis	44	Dr. Jesus A. Nolasco	MI	Cagayan.
Mountain Province	2	Dr. Enrique F. Ochoa	SMI	Bontoc.
Nueva Ecija	12	Dr. Jose Castrello	MI	Cabanatuan
Nueva Vizcaya	9	Dr. Manuel Arambulo	SS	Bayombong.
Occidental Negros	37	Dr. Ismael Villarica	MI	Bacolod.
Oriental Negros	36	Dr. Pio Lauengco	SS	Dumaguete.
Palawan	39	Dr. Rafael G. Jagunap (Actg.)	SS	Puerto Princessa.
Pampanga	14	Dr. Pedro Joven	MI	San Fernando.
Pangasinan	19	Dr. Constantino Limjoco	SMI	Lingayen.
Rizal	17	Dr. Felino Simpao	SMI	Pasig.
Romblon	29	Dr. Jose de Leon	S	Romblon.
Samar	30	Dr. Adolfo Aldaba	MI	Catbalogan.
Sorsogon	27	Dr. Bienvenido P. Caro	SS	Sorsogon.
Sulu	48	Dr. Julian Pilares	SMI	Jolo.
Surigao	40	Dr. Donato San Juan	SS	Surigao.
Tarlac	13	Dr. Domingo R. Tablan	MI	Tarlac.
Tayabas	21	Dr. Eufemio Jara	SMI	Lucena.
Zambales	11	Dr. Tirso Coronel	SS	Iba.
Zamboanga	45	Dr. Marcelino A. Azusano	MI	Zamboanga.

\* "S" means surgeon; "SS," senior surgeon; "MI," medical inspector; and "SMI," senior medical inspector.



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of January, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1928

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>324,522</b>

¹ Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I, MEJISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
<b>Total.....</b>	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,847
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,987
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,663</b>
<b>Grand total.....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, JANUARY, 1928**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
	mm.	°C.	°C.		°C.		8 a. m. mean	2 p. m. mean
1-10.....	761.74	24.8	32.4	3	17.9	9	27.6	27.9
11-20.....	61.86	25.2	33.4	18	18.9	11	27.4	27.6
21-31.....	60.92	25.7	33.8	27	19.6	24	27.6	27.9

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	77.1	83.9	10	69.9	8
11-20.....	77.6	86.3	13	71.3	15
21-31.....	73.7	81.4	25	68.6	23

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	E, quad.	1,380.0	240.5	4	31.9	3.8	1, 7, 8
11-20.....	NE	1,368.0	228.0	20	28.6	4.2	11
21-31.....	E, quad.	1,871.0	213.5	21	46.0	5.4	29

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	71 20	9 30	3, 4	0.8	1
11-20.....	26 45	7 05	11	7.9	4
21-31.....	78 40	10 10	29	0.5	1

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE  
CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	3	3	6	22.56
Filipinos.....	690	660	1,350	53.33
Spaniards.....	4	1	5	30.13
Other Europeans.....	2	.....	2	20.93
Chinese.....	34	40	74	48.83
All others.....	3	4	7	37.73
<b>Total and average.....</b>	<b>736</b>	<b>708</b>	<b>1,444</b>	<b>52.48</b>



## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MAMIC:</b>							
1. Tondo.....	182	185	367	12	13	25	392
2. San Nicolas.....	51	43	94	3	6	9	103
3. Binondo.....	35	25	60	1	1	2	62
Total.....	268	253	521	16	20	36	557
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	89	91	180	8	7	15	195
5. Quiapo.....	21	23	49	.....	1	1	50
6. San Miguel.....	9	15	24	1	2	3	27
7. Sampaloc.....	132	112	244	4	3	7	251
Total.....	251	246	497	13	13	26	523
<b>No. III, PACO:</b>							
8. Port Area.....	.....	2	2	.....	.....	.....	2
9. Intramuros.....	25	21	46	.....	4	4	50
10. Ermita.....	27	36	63	.....	1	1	66
11. Malate.....	74	64	138	5	.....	5	143
12. Paco.....	30	22	52	3	4	7	59
13. Pandacan.....	10	6	16	1	1	2	18
14. Santa Ana.....	9	14	23	2	1	3	26
Total.....	175	165	340	13	11	24	364
Grand total.....	694	664	1,358	42	44	86	1,444

Attended by physicians: living, 440; stillbirths, 25.

Attended by midwives: living, 96; stillbirths, 0.

Attended by families: living, 908; stillbirths, 20.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA

## BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	.....	.....	.....	.....
Filipinos.....	297	296	593	23.42
Spaniards.....	1	1	2	12.05
Other Europeans.....	.....	1	1	10.46
Chinese.....	21	4	25	16.50
All others.....	.....	.....	.....	.....
Total and average.....	319	302	621	22.55

## NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEISIC:</b>			
1. Tondo.....	108	96	204
2. San Nicolas.....	23	18	41
3. Binondo.....	9	6	15
<b>Total.....</b>	<b>140</b>	<b>120</b>	<b>260</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	45	44	89
5. Quiapo.....	5	9	14
6. San Miguel.....	8	5	13
7. Sampaloc.....	49	56	105
<b>Total.....</b>	<b>107</b>	<b>114</b>	<b>221</b>
<b>No. III, PACO:</b>			
8. Port Area.....	6	13	19
9. Intramuros.....	9	7	16
10. Ermita.....	28	27	55
11. Malate.....	10	9	19
12. Paco.....	11	4	15
13. Pandacan.....	8	8	16
14. Santa Ana.....			
<b>Total.....</b>	<b>72</b>	<b>68</b>	<b>140</b>
<b>Grand total.....</b>	<b>319</b>	<b>302</b>	<b>621</b>

NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF  
MANILA, TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	112	96
Divorced.....		
Widowed.....	27	65
Single.....	247	182
Conditions not stated.....	5	1
<b>Total.....</b>	<b>391</b>	<b>344</b>
<b>Grand total.....</b>	<b>735</b>	

Stillbirths ..... 45

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year	90	73	13	10	186
1 year plus	23	28	8	4	63
2 years plus	13	18	2	1	34
3 years plus	9	3		2	14
4 years plus	5	5			10
5 to 9 years	12	6	1		19
10 to 14 years	3	4	3	1	11
15 to 19 years	16	8	3	5	32
20 to 24 years	18	17	7	4	46
25 to 29 years	20	17	8	1	46
30 to 34 years	6	12	4	4	26
35 to 39 years	11	22	2		35
40 to 44 years	8	10	4	2	24
45 to 49 years	19	9	5	2	35
50 to 54 years	15	16	3	1	35
55 to 59 years	19	9	1		29
60 to 64 years	5	8	4	1	18
65 to 69 years	8	3		3	14
70 to 74 years	7	7	1		15
75 to 79 years	5	7	2	1	15
80 to 84 years	1	5			6
85 to 89 years	3	5			8
90 to 94 years	3	3	1		7
95 to 99 years		5			5
100 years and over		2			2
Age not stated					
Total	319	302	72	42	735

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

[Stillbirths not included]

International numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
	a. Typhoid fever.....			2	4									6
5	Malaria:													3
	a. Malarial fever.....			3										1
	b. Malarial cachexia.....			1										1
7	Mesales.....			1										1
10	Diphtheria.....			1										1
11	Influenza:													3
	a. With pulmonary complications specified.....			1	2									3
	b. Without pulmonary complications specified.....				1					2				3
16	Dysentery:													1
	a. Amebic.....													2
	b. Bacillary.....			2	1									3
	c. Unspecified or due to other causes.....			1	2									3
21	Erysipelas.....													1
24	Meningococcus meningitis.....													1
28	Rabies.....													1
29	Tetanus:													3
	a. Umbilical.....			3										1
	b. Others.....			1										1
31	Tuberculosis of the respiratory system.....			62	70			1		4				137
32	Tuberculosis of the meninges and central nervous system.....			4	3									7
33	Tuberculosis of the intestines and peritoneum.....			4	2									6
37	Disseminated tuberculosis:													3
	a. Acute.....			2	1									3
	b. Chronic or unspecified.....			1	1									2
38	Syphilis.....			1							1			2
43-69	<i>II. General diseases not included in Class I</i>													
44	Cancer and other malignant tumors of the stomach, liver.....													3
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....			1	2									1
46	Cancer and other malignant tumors of the female genital organs.....				1									1
49	Cancer and other malignant tumors of other or unspecified organs.....			1								1		1



NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA—Continued

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
108-127	<i>VI. Diseases of the digestive system</i>													
108	Diseases of the mouth and annexa.....				1									1
111	Ulcer of the stomach and duodenum:													
	a. Ulcer of the stomach.....			1	3									3
	b. Ulcer of the duodenum.....				2									3
112	Other diseases of the stomach (cancer excepted)				9					2	1			2
113	Diarrhea and enteritis (under 2 years of age).....			21	9									32
114	Diarrhea and enteritis (2 years and over).....			4	6									11
116	Diseases due to other intestinal parasites:													
	c. Nematodes (other than ancylostoma)													
	f. Parasites not specified.....			1	3									3
117	Appendicitis and typhlitis.....			1	1									1
118	Hernia, intestinal obstruction:													
	a. Hernia.....			1	1									1
122	Cirrhosis of the liver:													
	b. Not specified as alcoholic.....			2	1									3
124	Other diseases of the liver.....				2									2
126	Diseases of the pancreas.....			1	1									1
126	Peritonitis without specified cause.....			1	2									3
128-142	<i>VII. Nonvenereal diseases of the genito-urinary system and annexa</i>													
128	Acute nephritis (including unspecified under 10 years of age)			5	6									11
129	Chronic nephritis (including unspecified 10 years and over)			12	9		1							26
131	Other diseases of the kidneys and annexa.....				1									1
132	Calculi of the urinary passages.....			1	1									1
137	Cysts and other benign tumors of the ovary.....				1									1
143-150	<i>VIII. The puerperal state</i>													
144	Puerperal hemorrhage.....													2
146	Puerperal septicemia.....				3									3
148	Puerperal albuminuria and convulsions.....				1									1
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>													
151	Gangrene.....			1										1
153	Acute abscess.....									1				1







77	Other forms of mental alienation.....	1	1						2
86	Diseases of the ear and of the mastoid process: b. Diseases of the mastoid process.....	1							1
87-96	IV. Diseases of the circulatory system								
90	Other diseases of the heart.....	1	1						3
97-107	V. Diseases of the respiratory system								
100	Bronchopneumonia: a. Bronchopneumonia.....	8	7			1	1		17
101	Pneumonia: a. Lobar.....		2			1		1	4
108-127	VI. Diseases of the digestive system								
109	Diseases of the pharynx and tonsils (including adenoid vegetations): b. Others under this title.....		1						1
113	Diarrhea and enteritis (under 2 years of age).....	4	1						1
114	Diarrhea and enteritis (2 years and over).....		2						2
117	Appendicitis and typhlitis.....	2							2
118	Hernia, intestinal obstruction: a. Hernia.....		2						2
122	Cirrhosis of the liver: b. Not specified as alcoholic.....								1
123	Biliary calculi.....	1	1						1
126	Peritonitis without specified cause.....		1						1
128-142	VII. Nonseneral diseases of the genito-urinary system and annexa								
128	Acute nephritis (including unspecified under 10 years of age).....	1	1						2
129	Chronic nephritis (including unspecified 10 years and over).....	3	1						5
130	Glycuria.....	1							1
131	Other diseases of the kidneys and annexa.....	1							1
139	Benign tumors of the uterus.....		1						1
143-150	VIII. The puerperal state								
144	Puerperal hemorrhage.....		1						1
146	Puerperal septicemia.....		1						1
146	Puerperal albuminuria and convulsions.....		1						1
151-154	IX. Diseases of the skin and of the cellular tissue								
152	Furuncle.....							1	1
153	Acute abscess.....	1							1

NUMBER OF DEATHS BY NATIONALITY AND SEX. OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

Internationalist numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
160-163	<i>XII. Early infancy</i>													
160	Congenital debility, icterus, and sclerema			1									1	2
161	Premature birth; injury at birth:													
162	b. Injury at birth (not stillborn)			1										1
	Other diseases peculiar to early infancy				2									2
164-	<i>XIII. Old age</i>													
164	Senility			2										2
165-208	<i>XIV. External causes</i>													
183	Accidental traumatism by firearms (wounds of war excepted)			1										1
185	Accidental traumatism by fall				1									1
188	Accidental traumatism by other crushing (vehicles, railways, landlides, etc.):													
	c. Automobile accidents			1										1
198	Homicide by cutting or piercing instruments			2										2
	Total	2		63	39	1				5	2	1	1	114
	Grand total	2		102		1				7		2		114

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS  
IN THE CITY OF MANILA DURING THE MONTH OF JANUARY, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month			
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days					
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
All causes.....	103	83		8	9	16	16	5	3	5	1	1	3	35	32
COMMUNICABLE DISEASES:															
Typhoid and paratyphoid fever (1)															
Smallpox (6)															
Measles (7)															
Whooping-cough (9)															
Diphtheria (10)	1	1													
Influenza (11)															
Asiatic cholera (14)															
Dysentery (16)															
Meningococcus meningitis (24)															
Other epidemic and endemic diseases (25)															
Tetanus (29)	3	1						2		1				3	1
Other infectious diseases (1-42)¹	6	3			2	1				1				3	1
Barberi (55)															
Diseases of the nervous system (70; 71; 80; 85)															
Respiratory diseases (99; 100; 101; 107)	35	25				1				1				1	1
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)	16	7													
Congenital malformation (159)															
Early infancy (160; 161; 162; 163)	34	32		8	9	13	13	3	2	2	1	1	3	27	28
All other causes (43-205)¹	7	3					1							1	

¹ Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.



## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	22,196
Number of rats caught by spring traps.....	8,179
Number of cage wire traps set.....	527
Number of rats caught by cage wire traps.....	6
Number and kind of baits (coconuts).....	23,250
Number of poison portions placed.....	21,214
Number of rats found poisoned.....	404
Number of rats killed by clubs and other weapons.....	888
Number of rats found dead from other causes.....	584
Total number of rats otherwise caught, found dead or killed.....	5,061
Total number of rats sent to the laboratory for examination.....	5,061
Total number of rats found positive for plague.....	0

---

TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF JANUARY, 1928, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female		Cases	Deaths	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths			
I.....	No. 1.....	2	2	3	2	.....	.....	.....	1	.....	2	2	3	5	4
	No. 2.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....	1	1	3	1
	No. 3.....	.....	.....	2	.....	.....	.....	.....	.....	2	.....	2	2	3	.....
	No. 4.....	4	.....	1	.....	.....	.....	.....	.....	4	.....	1	1	3	.....
	No. 5.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	5	.....
II.....	No. 6.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
	No. 7.....	2	.....	2	.....	.....	.....	.....	.....	2	.....	1	1	1	.....
	No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	4	.....
	No. 9.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
	No. 10.....	.....	.....	3	1	.....	.....	.....	.....	1	.....	.....	.....	1	.....
III.....	No. 11.....	1	.....	1	.....	.....	.....	.....	.....	1	.....	3	1	3	1
	No. 12.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	2	.....
	No. 13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Grand total.....	13	2	13	3	.....	.....	1	1	13	2	14	4	27	6

## REMARKS:

Cases confirmed as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Typhoid carrier—1.....

27

0

0

0

19

0

0

8

17

2

DYSENTERIES REPORTED DURING THE MONTH OF JANUARY, 1928, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. ....	No. 1.....	.....	.....	.....	2	1	.....	.....	2	1	.....	.....	2	1
	No. 2.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 3.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
II. ....	No. 4.....	2	.....	.....	1	1	.....	.....	3	1	.....	.....	3	1
	No. 5.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 6.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.....	4	1	.....	1	1	2	1	5	2	2	1	7	3
III. ....	No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 9.....	2	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	2	.....
	No. 10.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 11.....	1	1	.....	1	.....	1	.....	1	1	1	1	2	1
	No. 12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....	9	1	.....	1	4	3	3	1	13	4	3	2	16	6

REMARKS:

Amoebic dysentery.....	3
Bacillary dysentery.....	9
Unspecified.....	4
Cases reported among nonresident persons not included in the table.....	9
Deaths reported among nonresident persons not included in the table.....	5
Dysentery carrier—None.....	

**CHOLERA REPORTED DURING THE MONTH OF JANUARY, 1923, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I..	No. 1.	.....	No. 1.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 2.	.....	No. 2.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 3.	.....	No. 3.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 4.	.....	No. 4.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
II..	No. 5.	.....	No. 5.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 6.	.....	No. 6.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.	.....	No. 7.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 8.	.....	No. 8.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 9.	.....	No. 9.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
III..	No. 10.	.....	No. 10.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 11.	.....	No. 11.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 12.	.....	No. 12.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 13.	.....	No. 13.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.	.....	No. 14.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

**REMARKS:**

No nonresident case was reported during the month.

Cholera carrier—7



DIPHTHERIA REPORTED DURING THE MONTH OF JANUARY, 1928. CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths
I.....	No. 1.....	3	1										3	1					3	1
	No. 2.....	1											1						1	
	No. 3.....	1											1						1	
II.....	No. 4.....																			
	No. 5.....																			
	No. 6.....																			
	No. 7.....	1																		
	No. 8.....	1		1									1						2	
	No. 9.....	1											1			1			1	
	No. 10.....												1						1	
III.....	No. 11.....																			
	No. 12.....	2		2												2			2	
	No. 13.....	1		1									1			1			2	
	No. 14.....																			
	Grand total.....	9	1	4									9	1		4			18	1

REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—5

5

1

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF JANUARY, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	25	5	1	
Varicella.....	7	4		
Varioloid.....				
Smallpox.....				
Measles.....	8	2	1	
Whooping cough.....				
Influenza.....	8	11	3	3
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....		1		1
Tuberculosis of the respiratory organs.....	141	128	66	71
Tuberculosis of other organs.....	16	12	11	7
Beriberi, infantile.....	4	6	4	6
Beriberi, adults.....		3		3

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	24	2	2	
Varicella.....	2	4		
Varioloid.....				
Smallpox.....				
Measles.....				
Whooping cough.....				
Influenza.....	1	1	1	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory organs.....	36	14	13	6
Tuberculosis of other organs.....	2	3		2
Beriberi, infantile.....	2		2	
Beriberi, adults.....				

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINE  
FOR THE MONTH OF JANUARY, 1928**

Sera and vaccines	On hand January 1, 1928	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of month
Antidiphtheric serum (tubes).....		100	100	100	
Antidysenteric serum (ampoules).....	165	400	565	286	279
Antitetanic serum (units).....		500,000	500,000	400,000	100,000
Cholera vaccine (c.c.).....		24,000	24,000	14,400	9,600
Dried vaccine virus (units).....	55,000	100,000	155,000	75,400	79,600
Dysenteric vaccine (c.c.).....	1,200	27,000	28,200	20,220	7,980
Fresh vaccine virus (units).....	42,200	200,000	242,200	162,100	80,100
Mixed typhoid-cholera vaccine (c.c.).....		240,000	240,000	151,800	88,200
Normal horse serum (ampoules).....		36	36	36	
Typhoid vaccine (c.c.).....	5,760	25,020	30,780	26,400	4,380

Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated					
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over	
			Never	Successfully	Unsuccessfully	Positive	Negative	Positive	Negative	Total
No. 1.	Tondo.	1,314	510		804	338	61	12		353
	San Nicolas.	58	40		18	145	17	2		147
	Binondo.	31	30		1		5	1		34
										5
No. 2.	Santa Cruz.	159	136		23	173	15	9		184
	Quiapo.	45	33		12	53	10	1		54
	San Miguel.	21	14		7	39	5	8		53
	Sampaloc.	1,061	306	713	42	257	47	6	1	626
										132
No. 3.	Port Area.	44	40		4	55		3		58
	Intramuros.	105	87		18	114	18	2		116
	Ermita.	111	86		25	109	19	3	5	117
	Malata.	231	166		65	84	16	5	1	90
	Paco.	29	22		7	46	7	2		48
	Pandacan.	28	22		6	52	6	2		54
	Santa Ana.									6
	Total.	3,237	1,492	713	1,032	1,495	230	56	1	1,934
										84
										383
										84
										315

## Vaccine virus:

Remainder from last month	8,070 units
Received during the month	5,500 units
Used during the month	5,500 units
Remainder for next month	8,070 units
Total	13,570 units 13,570 units

**ANTI-DYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF JANUARY, 1928**

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.....	Tondo.....	6	8	4	6	10	14
	San Nicolas.....	13	2	2	.....	15	2
	Binondo.....	.....	.....	.....	.....	.....	.....
No. 2.....	Santa Cruz.....	10	10	8	7	18	17
	Quiapo.....	.....	.....	.....	.....	.....	.....
	San Miguel.....	.....	.....	.....	.....	.....	.....
	Sampaloc.....	31	41	10	7	41	48
No. 3.....	Port Area.....	.....	.....	.....	.....	.....	.....
	Intramuros.....	.....	.....	.....	.....	.....	.....
	Ermita.....	.....	.....	.....	.....	.....	.....
	Malate.....	.....	.....	.....	.....	.....	.....
	Paco.....	9	6	2	2	11	8
	Pandacan.....	.....	.....	.....	.....	.....	.....
	Santa Ana.....	.....	.....	.....	.....	.....	.....
Total.....		69	67	26	22	95	89

ANTI-TYPHOID AND ANTI-CHOLERA VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF JANUARY, 1928.

53

Health districts	Municipal districts	Number of injections made in—												Total number of injections							
		Adults						Children						First		Second		Third			
		First injections		Second injections		Third injections		First injections		Second injections		Third injections									
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.				
No. 1.....	Tondo.....		2,080		1,598		829		1,020		1,012		520		3,050		2,610		1,349		
	San Nicolas.....		991		787		537		316		219		313		1		1,006		860		
	Binondo.....		768		434		352		36		29		42		1,307		463		394		
No. 2.....	Santa Cruz.....		1,323		642		606		334		102		205		1,657		744		811		
	Quiapo.....		263		102		96		63		80		42		326		132		138		
	San Miguel.....		3,010		1,910		1,816		2,300		1,193		917		5,310		3,108		2,783		
No. 3.....	Port Area.....		420		396		283		120		104		98		540		500		381		
	Intramuros.....		525		520		214		320		94		85		845		614		299		
	Ermita.....		737		626		520		536		634		300		1,273		1,260		820		
	Malate.....		524		428		410		428		333		215		952		761		625		
	Paco.....		656		620		534		37		199		186		37		819		720		
	Pandacan.....																				
	Santa Ana.....																				
	Total.....		11,247		8,063		6,197		5,876		3,949		2,923		38		17,123		12,012		9,120

1 Mixed typhoid and cholera vaccine used for the first and second injections.  
Typhoid and paratyphoid vaccine used for the third injections.

V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED REPORT OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES DURING JANUARY, 1928<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....				
Agusan.....				
Albay.....	3,209	1,162	388	1,659
Antique.....				
Bataan.....	1,056	375	185	496
Batanes.....				
Batangas.....	5,219	1,804	1,335	2,080
Bohol.....				
Bukidnon.....				
Bulacan.....	2,764	1,091	724	949
Cagayan.....	6,098	574	5,488	36
Camarines Norte.....				
Camarines Sur.....				
Capiz.....				
Catanduanes.....				
Cavite.....	7,632	687	5,617	1,328
Cebu.....				
Cotabato.....				
Davao.....	2,094	1,388	572	184
Ilocos Norte.....	7,800	158	7,151	491
Ilocos Sur.....				
Iloilo.....	5,584	1,028	4,584	272
Isabela.....				
Laguna.....	10,024	825	8,712	487
Lanao.....	1,069	772	138	159
La Union.....	2,874	687	290	1,897
Leyte.....	8,210	1,801	5,271	1,138
Marinduque.....				
Masbate.....	6,974	906	4,993	1,075
Mindoro.....				
Misamis.....				
Mountain Province.....	3,071	349	2,147	575
Nueva Ecija.....				
Nueva Vizcaya.....	399	121	232	46
Occidental Negros.....	5,614	1,264	3,437	913
Oriental Negros.....				
Palawan.....				
Pampanga.....	4,040	1,552	410	2,078
Pangasinan.....				
Rizal.....	1,568	889	241	438
Romblon.....				
Samar.....				
Sorsogon.....				
Sulu.....				
Surigao.....				
Tarlac.....	2,478	675	486	1,317
Tayabas.....				
Zambales.....				
Zamboanga.....				
Total.....	88,077	18,058	52,401	17,618

**NOTE:**<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES DURING JANUARY, 1928**—Continued

Provinces	Inspections of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....								
Agusan.....								
Albay.....	579	253	434	132	332	161	1,345	546
Antique.....								
Bataan.....	240	43	316	135	140	45	696	223
Batanes.....								
Batangas.....	853	179	1,249	506	792	760	2,894	1,445
Bohol.....								
Bukidnon.....								
Bulacan.....	761	134	700	213	357	296	1,818	643
Cagayan.....	50	14	83	83	587	1,528	720	1,625
Camarines Norte.....								
Camarines Sur.....								
Capiz.....								
Catanduanes.....								
Cavite.....	527	76	677	318	1,927	2,340	3,131	2,784
Cebu.....								
Cotabato.....								
Davao.....	53	25	181	69	725	427	959	521
Ilocos Norte.....	108	12	835	322	3,281	2,598	4,224	2,932
Ilocos Sur.....								
Iloilo.....	210	81	871	465	2,159	3,421	3,240	3,967
Isabela.....								
Laguna.....	101	27	339	364	1,784	2,607	2,224	2,998
Lanao.....	29	3	136	49	429	219	594	271
La Union.....	399	184	490	465	355	604	1,244	1,253
Leyte.....	166	7	1,285	217	3,707	1,497	5,158	1,721
Marinduque.....								
Masbate.....	125	3	401	83	1,340	911	1,866	997
Mindoro.....								
Misamis.....								
Mountain Province.....	4		39	5	116	148	159	153
Nueva Ecija.....								
Nueva Vizcaya.....	90	29	33	32	90	109	213	170
Occidental Negros.....	143	11	619	84	913	728	1,675	823
Oriental Negros.....								
Palawan.....								
Pampanga.....	313	118	352	161	164	354	829	633
Pangasinan.....								
Rizal.....	527	180	102	62	64	119	693	361
Romblon.....								
Samar.....								
Sorsogon.....								
Sulu.....								
Surigao.....								
Tarlac.....	170	99	388	262	252	498	810	859
Tayabas.....								
Zambales.....								
Zamboanga.....								
Total.....	5,448	1,478	9,530	4,027	19,514	19,370	34,492	24,876

## NOTE:

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Laguna.....	95	49	.....	144
Total.....	95	49	.....	144

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES DURING JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Laguna.....	217	132	.....	349
Pampanga.....	225	5	.....	230
Total.....	442	137	.....	579

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Laguna.....	1,516	1,094	646	3,256
Total.....	1,516	1,094	646	3,256

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES DURING JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Bataan.....	1,321	902	.....	2,223
Laguna.....	250	201	.....	451
Marinduque.....	693	105	.....	798
Pampanga.....	12,006	897	.....	12,903
Total.....	14,270	2,105	.....	16,375

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE  
MONTH OF JANUARY, 1928**

No case and no death reported during the month.

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE  
MONTH OF JANUARY, 1928**

No case and no death reported during the month.



**REPORT OF THE DIVISION OF SANITARY ENGINEERING CITY OF MANILA,  
DURING THE MONTH OF JANUARY, 1928**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, January 1, 1928:</b>				
Minor.....	113	124	76	313
Sewer.....	27	52	.....	79
Vacating.....	8	11	.....	19
Filling.....	24	36	21	81
<b>Total.....</b>	<b>172</b>	<b>223</b>	<b>97</b>	<b>492</b>
<b>Orders issued during the month:</b>				
Minor.....	12	6	3	21
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	1	.....	.....	1
<b>Total.....</b>	<b>13</b>	<b>6</b>	<b>3</b>	<b>22</b>
<b>Orders completed during the month:</b>				
Minor.....	7	8	4	19
Sewer.....	1	.....	.....	1
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>8</b>	<b>8</b>	<b>4</b>	<b>20</b>
<b>Orders cancelled during the month:</b>				
Minor.....	.....	21	.....	21
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	1	.....	.....	1
<b>Total.....</b>	<b>1</b>	<b>21</b>	<b>.....</b>	<b>22</b>
<b>Orders pending, January 31, 1928:</b>				
Minor.....	118	101	75	294
Sewer.....	26	52	.....	78
Vacating.....	8	11	.....	19
Filling.....	24	36	21	81
<b>Total.....</b>	<b>176</b>	<b>200</b>	<b>96</b>	<b>472</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	29	51	39	119
<b>Permits for minor building constructions:</b>				
Approved.....	38	46	24	108
Disapproved.....	9	26	2	37
<b>New buildings completed.....</b>	<b>15</b>	<b>27</b>	<b>24</b>	<b>66</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	4	38	19	61
Disapproved.....	2	7	3	12
<b>Prosecutions:</b>				
Convictions.....	.....	.....	.....	.....
Dismissals.....	.....	.....	.....	.....
Amount of Fines.....	.....	.....	.....	.....
<b>Plumbing permits issued.....</b>	<b>42</b>	<b>51</b>	<b>49</b>	<b>142</b>
<b>Plumbing projects completed.....</b>	<b>29</b>	<b>38</b>	<b>31</b>	<b>98</b>
<b>Premises connected to the sanitary sewer to December 31, 1927.</b>	<b>2,537</b>	<b>4,359</b>	<b>752</b>	<b>7,648</b>
Connected during the month.....	5	5	6	16
<b>Total.....</b>	<b>2,542</b>	<b>4,364</b>	<b>758</b>	<b>7,664</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

FEBRUARY, 1928

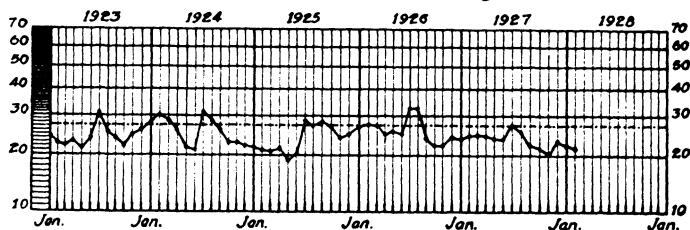
No 2

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY of MANILA*



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
LEONCIO LOPEZ-RIZAL, M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Report of the Typhoid Situation in Manila During 1924, by THE COMMITTEE ON TYPHOID INVESTIGATION, P.H.S. ....	61
The Trachoma Campaign in Pangasinan, by Dr. CONSTANTINO LIMJOCO .....	82
On the Value of Present Methods of Treating Leprosy, by Drs. H. W. WADE and C. B. LARA .....	87
Miscellaneous .....	90
General Statistics .....	93

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**FEBRUARY, 1928**

**No. 2**

**REPORT OF THE TYPHOID SITUATION IN MANILA  
DURING 1924**

By THE COMMITTEE ON TYPHOID INVESTIGATION, P.H.S.

**I. INTRODUCTION**

Under paragraphs 21, 22, and 23 of Special Order No. 7 of the Director of Health, P. H. S., dated July 8, 1924, as amended by paragraph 7 of Special Order No. 8, dated August 4, 1924, which are hereunder transcribed, the Committee on Typhoid Investigation, with the valuable aid and kind advices of Dr. G. R. Lacy of the Bureau of Science and Col. J. F. Siler of the Army Medical Research Board, made detailed study of the typhoid situation in the city during the year 1924, the results of which are briefly recorded in this report.

**"PHILIPPINE HEALTH SERVICE**

*MANILA, July 8, 1924*

SPECIAL ORDER }  
No. 7 }

PARAGRAPH 21. Senior Medical Inspector Leoncio Lopez-Rizal, Medical Inspector Regino G. Padua, Senior Surgeon Manuel V. Argüelles, Surgeon Francisco Gomez, and Intern Faustino Estella of San Lazaro Hospital are hereby constituted a Committee to make a detailed investigation of the typhoid situation in Manila from all angles with a view to the adoption, later, of additional measures of control. Senior Medical Inspector Leoncio Lopez-Rizal will act as Chairman and Dr. Faustino Estella the Secretary of the Committee.

PAR. 22. Dr. G. R. Lacy of the Bureau of Science and Colonel J. F. Siler of the Army Medical Research Board have consented to aid and advise with this Committee with special reference to the Laboratory phases of the investigation.

PAR. 23. The Committee will, at the termination of the work, submit a report of the findings and recommendations to the Director of Health.

Special Order No. 3, under date of March 18, 1924, and all others to the contrary are hereby abrogated.

V. JESUS

*Director of Health*

By (Sgd.) J. P. BANTUG

*Acting Executive Officer"*

Two members of the Committee were in charge of following up the cases in houses and hospitals where the patients were confined, taking their clinical and epidemiological histories, and making from time to time such observation as to establish an accurate clinical diagnosis. Two other members were detailed to secure the blood of doubtful cases for haemoculture and widal test, and feces and urine specimens for the isolation of the typhoid and paratyphoid organism. Most of this laboratory phase of the investigation was worked out in the Bureau of Science. One member was in charge of the necropsies and other post-mortem diagnosis work. The autopsies were performed with the consent of the family at the Morgue of San Lazaro Hospital and only on those bodies which were in life diagnosed as typhoid suspects.

A total of 736 cases were investigated clinically and epidemiologically, 265 for haemoculture, and 379 feces and 198 urine specimens for the isolation of the etiological agent. In this connection, it must be stated that the haemoculture was not usually done when the serological reaction resulted positive in unvaccinated patients. There were 45 autopsies performed during the course of the investigation.

Thus, the typhoid incidence during the year was studied from all possible angles. When the cases were reported to the health authorities either by telephone or by the usual notification card, they were followed up to their termination or until such time as the diagnosis was confirmed or established. With the above-cited data, it is believed that fairly representative samples were at hand to make a thorough study from an epidemiological standpoint.

We sincerely appreciate the valuable help rendered us by Dr. E. Hernando, chief of the Division of Metropolitan Sanitation, and by Mr. M. Mañosa, chief of the Division of Sanitary

Engineering, both of this Service, in the calculations of population using the different kinds of drinking water and the various sewage disposal systems. We are indebted particularly to the Chiefs of Hospitals in the city for permitting us to get the data, from actual patients, needed in this study; and to the private practitioners in the city, we owe thanks for their ready and speedy coöperation in the reporting of cases, without which the statistical informations used in this report would not have been complete.

## II. PRESENT STATUS

The typhoid situation during 1924 has been, on the whole, better than during the last two years. In fact, if the morbidity and mortality rates during 1924 are both considered as being normal or 100 per cent under present conditions, those of 1923 were, respectively, 143.42 per cent and 127.29 per cent. In other words, the morbidity and mortality rates in 1923 were, respectively, 43.42 per cent and 27.29 per cent higher than those in 1924. Similarly, such rates in 1922 were, respectively, 78.14 per cent and 56.29 per cent higher than in 1924, and 24.20 per cent and 22.78 per cent over those in 1923. With the methods of control employed by the Service, therefore, the annual incidence and death-rates from typhoid were beginning with 1922, reduced from year to year, their mean values from that year per month being, respectively,  $329.17 \pm 13.27$  and  $87.72 \pm 3.41$  per 100,000 population. These facts are shown in Tables I and II:

TABLE I.—*Showing the annual morbidity and mortality rates per 1,000,000 population from typhoid fever occurring among residents in the City of Manila, by months*<sup>1</sup>

Months	1919		1920		1921		1922	
	Morbidity	Mortality	Morbidity	Mortality	Morbidity	Mortality	Morbidity	Mortality
January	192.09	54.29	82.33	24.70	247.61	101.40	284.33	128.11
February	175.38	59.46	53.52	16.47	170.49	30.53	524.43	152.12
March	221.32	87.69	94.68	41.17	190.78	73.07	896.73	240.20
April	196.26	66.81	53.52	28.82	300.38	89.30	724.59	148.12
May	171.21	58.46	115.27	37.05	162.37	97.42	444.36	108.00
June	175.38	83.52	160.55	82.33	202.96	64.95	416.34	124.10
July	167.03	45.93	247.00	107.03	194.84	60.89	352.29	42.04
August	150.33	91.87	325.22	185.25	223.26	69.01	352.29	60.05
September	167.03	58.46	185.25	78.22	280.08	69.01	292.24	64.05
October	121.10	70.99	197.60	102.92	267.91	89.30	328.27	80.08
November	141.98	45.93	279.93	102.92	211.00	60.89	312.20	72.00
December	116.92	33.41	325.22	160.55	292.26	77.12	256.21	80.07
Total	166.34	62.98	176.67	80.62	228.67	74.08	432.02	109.00

<sup>1</sup> Graphically illustrated by Charts I and II.

TABLE I.—Showing the annual morbidity and mortality rates per 1,000,000 population from typhoid fever occurring among residents in the City of Manila, by months<sup>1</sup>—Continued

Months	1923		Average of 5 years		1924	
	Morbidity	Mortality	Morbidity	Mortality	Morbidity	Mortality
January.....	592.33	157.96	282.52	94.17	237.65	85.71
February.....	513.36	102.67	290.64	73.88	268.82	54.54
March.....	442.28	114.52	372.63	112.03	241.55	77.92
April.....	355.40	94.77	328.79	86.05	276.61	66.23
May.....	308.01	63.18	241.93	73.07	272.72	109.09
June.....	221.14	55.20	236.24	82.00	288.30	70.13
July.....	280.37	63.18	249.23	65.76	198.69	54.54
August.....	327.76	90.82	276.84	99.04	284.41	85.71
September.....	272.47	82.93	240.30	70.63	209.59	58.43
October.....	248.78	78.98	233.81	84.43	214.28	50.65
November.....	284.32	67.13	246.80	69.82	229.86	58.44
December.....	327.76	94.77	264.66	89.30	194.80	66.23
Total.....	347.83	88.85	272.03	83.35	242.52	69.80

<sup>1</sup> Graphically illustrated by Charts I and II

TABLE II.—Showing the chief constants of variation in morbidity rates by month per 100,000 population from typhoid fever among residents in the city during the last three years ending December, 1924.

Rates	Mean	Standard deviation	Coefficient of variation
Morbidity.....	329.17±13.27	118.07±9.38	35.87±3.20
Mortality.....	87.72±3.41	30.38±2.41	34.63±3.06

The relatively low incidence and death-rates in 1919 and 1920 probably resulted from the faulty notification of cases and deaths from the disease. In fact, this faulty notification and diagnosis of the cases previous to the year 1922 might have been the one if not the chief cause of the great discrepancy occurring in the percentage of deaths per 100 cases. In none previous to that year, has the case fatality been lower than 32 per cent while from 1922 to 1924 inclusive, such did not go up higher than 29 per cent. The latter ratio is still high since in the United States it has been asserted that a mortality rate (per 100 cases over 20 per cent, may be regarded an exception and not the rule.

### III. NOTIFICATION AND DIAGNOSIS

Since 1921, the notification and diagnosis of the cases has improved. More active coöperation has been obtained from medical practitioners and institutions in the reporting to the health authorities of typhoid cases and deaths. Public health education has also been an important factor in getting good results in this endeavor. The defective notification, prior to that year,



may be shown by a careful analysis of the following measurements of variation:

TABLE III.—*Showing the chief variation constants in the number of reported typhoid cases per week and per month according to specification.*

Year	Specification	Mean	Standard deviation	Coefficient of variation
1924.....	Number of cases per week.....	14.71±0.46	4.94±0.33	33.60±2.46
1919 to 1923, inclusive.....	Number of cases per month.....	62.00±2.14	24.63±1.52	39.72±2.81

In other words, the approximate number of cases reported per week during the last five years ending December, 1923, was 14.31 in spite of the epidemic that occurred in 1922 and 1923, as against 14.71 in 1924. This indicates that the cases during the pre-epidemic years, viz.: 1919 and 1920 and perhaps 1921 also have not all been reported to the health authorities.

Going back further, the number of deaths reported per month similarly shows a great deal of variation which in part may reasonably be explained by faulty diagnosis. This is illustrated by Chart III and by the next table:

TABLE IV.—*Showing the chief variation constants in the number of reported typhoid deaths per month during five-year periods*

Year periods	Mean	Standard deviation	Coefficient of variation
1910 to 1914, inclusive.....	5.37±0.26	3.02±0.19	55.28±3.90
1915 to 1919, inclusive.....	12.30±0.58	6.65±0.41	53.16±4.09
1920 to 1924, inclusive.....	20.70±0.74	8.53±0.52	41.19±9.23
1910 to 1924, inclusive.....	12.82±0.45	8.99±0.32	70.11±3.51

But, beginning 1921, the mean values in the number of reported cases per month do not seem to show great discrepancies except during the epidemic years of 1922 and 1923. Thus:

TABLE V.—*Showing the chief variation constants in the number of typhoid cases reported per month*

Year	Mean	Standard deviation	Coefficient of variation
1921 to 1923, inclusive.....	75.56±2.12	18.83±1.50	24.92±2.10
1922 to 1924, inclusive.....	77.36±1.86	16.56±1.32	21.41±1.78
1922 to 1923, inclusive.....	84.58±2.05	14.92±1.45	17.64±1.77

The endemic typhoid in 1921 has lessened the mean value in the number of reported cases per month during 1922 and 1923 to  $9.02 \pm 2.95$  points while that in 1924 to  $7.22 \pm 2.76$ . In other words, there was no material difference between the mean

values in the reported number of cases per month during 1921 from that during 1924, having regard to the probable error involved. Hence, the incidence of typhoid during 1924 has been practically the same as that in 1921, which under existing conditions and circumstances, might be considered, at the time, normal in the city.

Out of 745 cases with 215 deaths reported in 1924, 736 were investigated and were reported as having had their onset during the year. Of the 745 cases, 8.03 per cent were not reported while they were yet alive. It may not be amiss to state, in this connection, that of the cases reported as typhoid, about 85 per cent to 90 per cent were confirmed by either clinical or laboratory methods, thus leaving a relatively small margin of possible error.

The laboratory examination of the blood specimens taken from the cases gave the following positive results: Widal reaction 37.74 per cent and hæmoculture 45.48 per cent. Of those examined for hæmoculture, positive finding was obtained in the proportion of 54.26 per cent among cases in which the blood was taken within the first two weeks of the disease, 36.17 per cent within the next two weeks, and 9.57 per cent among those in which the stage of the disease was undetermined.

The isolation of the specific organism from the stool was positive in 5.54 per cent of the cases and from the urine in 1.01 per cent and, at autopsy, positive lesions were found in 40 per cent of those who died as typhoid suspects; in other words, 60 per cent of them showed lesions other than those of typhoid. The post-mortem diagnoses were confirmed by histological examination of the tissues and by the isolation of the typhoid organism from the spleen and gall bladder.

#### IV. PREVALENCE

##### AGE AND SEX INCIDENCE

Over 75 per cent of the cases occurred in the second and third decades of life. Specifically the distribution by age was as follows: in the first decade 8.43 per cent, in the second decade 40.70 per cent, in the third 35.88 per cent, in the fourth 10.98 per cent, in the fifth 2.14 per cent, and in the sixth decade and over 1.87 per cent. These do not very materially differ from the findings of the previous committee (Monthly Bulletin, P.H.S., October and December, 1922, p. 307) except that they found less than 70 per cent of the cases occurred in the second and third decades and more than 10 per cent in the first.

The prevalence of the disease in the second and third decades of life may be better appreciated by the age-specific incidence rates as may be seen in the following table and as graphically illustrated in Chart IV:

TABLE VI.—*Showing age-specific incidence rates, per 100,000, from typhoid fever in the city during 1924*

Age group	Population <sup>1</sup>	Number of cases	Morbidity rate
0-10 .....	75,214	63	83.76
11-20 .....	70,421	303	430.27
21-30 .....	68,569	267	389.39
31-40 .....	41,781	82	196.26
41-50 .....	27,924	16	57.30
51 and over .....	24,101	14	58.09
Total for alleges .....	308,010	745	241.87

<sup>1</sup> Estimated in proportion to the age distribution of the population in 1918 Census.

From an epidemiological standpoint and for the purposes of this investigation, to sex incidence is not significant. However, it may be stated that 63.49 per cent of the cases and 61.86 per cent of the deaths were males.

#### OCCUPATION AND NATIONALITY

More than half of the cases that occurred during the year were students and laborers; 25.65 per cent were of the former and 26.06 per cent were of the latter class. Cases belonging to the class of food-handlers occurred in the proportion of 22.92 per cent; of merchants, government employees, and professional men 17.60 per cent; and of undetermined occupation 7.78 per cent.

Filipino cases occurred in the proportion of 91.52 per cent, Chinese 4.51 per cent, Spaniards 0.41 per cent, Americans 0.27 per cent, other Europeans 0.14 per cent, and all others 3.15 per cent. In terms of population, 237.44 per 100,000 were among the Filipinos, 184.81 were among the Chinese, 153.45 among the Spaniards, 88.81 among other Europeans, 63.82 among Americans, and 1,052.15 among all other nationalities. In this connection, it may be stated that paratyphoid "A" fever occurred in the proportion of about 80 per cent of the cases among the foreigners, especially the Japanese.

#### SEASONAL VARIATION

During the last five years ending December, 1923, the curve of incidence had its peak in the first quarter, while in the year

1924, it fell in the second quarter. The outbreaks during the months of March and April in 1922 and 1923, may in part explain the high incidence rate during the first quarter of the last five years.

TABLE VII.—*Showing the percentage seasonal distribution of the cases and deaths from typhoid fever*<sup>1</sup>

Quarters of the year	Average 5 years ending 1923		1924	
	Cases No. = 804.2	Deaths No. = 246.4	Cases No. = 745	Deaths No. = 215
First.....	28.97	28.00	25.64	26.05
Second.....	24.72	24.11	28.86	29.50
Third.....	23.48	23.54	23.62	23.72
Fourth.....	22.83	24.35	21.88	20.93

<sup>1</sup> Graphically shown in Chart V.

It may, therefore, be informed that under prevailing conditions—such as existed during 1924—the disease was, on the whole, more or less prevalent during the hot season of the year.

#### GEOGRAPHICAL DISTRIBUTION

Practically the same age and seasonal incidence was observed in the different health districts of the city. However, the incidence rate of all ages and all sexes in Intramuros was 279.89 per 100,000 population, in Meisic 206.63, in Sampaloc 282.05, in Tondo 228.98, and in Paco 281.98, against 241.87 in the whole City of Manila.

#### V. PROBABLE SOURCE OF INFECTION

##### WATER

The water used for drinking purposes in the city came from two main sources of supply, viz.: the city water from the Montalban source and the artesian water from various wells. Taking into consideration the kind of drinking water used for one month before the onset, the cases were distributed as follows: 55.74 per cent had been using city water for drinking purposes, 36.75 per cent artesian, 4.23 per cent city and artesian combined, 3.14 per cent other sources, and 0.14 per cent water of undetermined source. It may seem at first sight that the city water was at fault. But, this assumption may not hold true if we take into account that about 60 per cent of the population used city water for drinking. Under that estimate, the incidence rate among those using city water would be 226.73 per 100,000

population while the rate among those using other than city water was 253.24.

TABLE VIII.—*Showing the bacteriological examination of the city water at different points by months during 1924*

Months	New reservoir <sup>1</sup>			Santa Mesa Tap <sup>2</sup>			City Tap <sup>3</sup>		
	Average bacterial count per c. c.	Per cent of positives (10 c. c.)		Average bacterial count per c. c.	Per cent of positives (10 c. c.)		Average bacterial count per c. c.	Per cent of positives (10 c. c.)	
		Pre-sump-tive test	Isola-tion of B. coli		Pre-sump-tive test	Isola-tion of B. coli		Pre-sump-tive test	Isola-tion of B. coli
January.....	242	64.40	22.54	102	25.76	3.22	59	25.76	3.22
February.....	81	62.45	17.25	6	69.00	0	23	62.10	3.45
March.....	113	35.42	0	34	57.74	0	24	51.52	0
April.....	1,442	53.28	0	5,667	33.33	0	68	6.66	0
May.....	2,331	48.30	6.44	348	28.98	0	517	19.32	0
June.....	2,276	89.91	13.32	218	26.64	0	219	53.28	0
July.....	1,678	83.72	3.23	606	22.54	0	103	12.88	0
August.....	807	90.16	0	504	28.98	0	690	9.99	0
September.....	1,061	100.00	0	97	9.99	0	152	16.65	0
October.....	390	90.16	6.44	133	28.98	0	86	22.54	0
November.....	484	86.48	6.66	107	33.33	0	81	23.31	0
December.....	361	64.40	0	40	28.98	0	116	16.10	0

<sup>1</sup> Before chlorination.

<sup>2</sup> After chlorination.

The above data, by months, do not seem to be in relation with the monthly incidence rate of typhoid fever in the city during the year. This is graphically shown by Charts VI, VII, and VIII. Practically the same observation was made in a previous investigation (Monthly Bulletin, P.H.S. Loc. cit.). The conclusion that may be inferred from such findings would be obvious, viz.; that the city water did not greatly influence the incidence of typhoid fever during 1924, in Manila. Moreover, the chlorination of the water at its source has been continued during the year in a proportion of from 0.4 to almost 1.00 part per million and in 1922 and 1923, the incidence was reduced without any material change in the purification system of the water supply.

Neither can it be stated positively that the artesian water has disseminated the typhoid infection in the city. There were in operation 23 artesian wells supplying the city with water for drinking. Two of them were closed in December, 1923, 14 on January, 1924, and 4 in February, leaving only 3 that were permitted to supply water to limited sections of the city. If artesian water was disseminating the infection, the closure of a large majority of them during January, 1924, should have resulted in a lowered incidence rate in February, 1924. This reduction, however, did not occur and the incidence rate in February was higher than for the previous month. Similarly, it is observed

that there is no chronological relation between the reopening of these wells, after the structural defects and possible contamination had been remedied, and the monthly incidence of typhoid in the city. For instance, almost half the number of wells closed were reopened between March and the end of June, and the other half between July and September inclusive. When in May, 7 of these wells were opened, the incidence rate in June became higher; on the other hand, when in August, 6 of them were opened, the incidence rate became lower in September.

Though both the city and the artesian well waters, when freshly taken from the faucet or outlet, do not, in our opinion, have a direct bearing on the dissemination of typhoid in the city, yet their contamination thru careless handling on the part of the water carriers (*cargadores de agua*) and of members of the household who might have been exposed to the infection, was shown to be a probable factor in the transmission of the disease in that examinations of many samples of water thus collected and stored for drinking purposes in tiendas, invariably showed high bacterial counts all of which were positive for *D. coli*. This was, in a previous investigation, likewise demonstrated by the biological examination of the water in the cans and receptacles used by the water carriers, the specimen having been taken while they were on the way to the consumers.

#### SEWAGE DISPOSED

The number of cases developed in houses provided with septic tanks is so small (0.41 per cent of the total) that they may be discarded for the purpose of this investigation. Similarly, those with pail system which constitute only 3.83 per cent of the total, may be eliminated in the study. But the cases that used the public midden sheds and the flush closets deserve attention, as they constituted 40.63 per cent and 55.13 per cent, respectively, of the total.

In order to appreciate the above facts, it was thought advisable to express them in terms of population using the above types of sewage disposal. With the kind aid of the chief of Metropolitan Sanitation Division and that of the sanitary engineer of this Service, the population using each type was calculated. It was ascertained that about 147,854 residents of the city used the sanitary flush closets, 91,956 the public midden shed, 49,200 the pail system and 19,000 the septic tanks. In other words, 48.00 per cent of the population of Manila used flush closets, 29.85 public midden shed, 15.97 per cent pail system, and 5.17 per cent septic tanks. That being the case, the incidence rate

per 100,000 population would be 272.56 for flush closets, 322.98 for public closets, 56.91 for pail closets, and 15.78 for septic tanks. The ratios of the percentage of the cases to that of the population are as follows: 1.1485 for the flush closets, 1.3611 for the public midden shed, 0.0664 for septic tanks, and 0.0240 for pail system.

It may then be inferred that there occurred relatively more cases among these using public closets in terms of population belonging to that group than those who used the sanitary system of waste disposal. To explain the high incidence among population using flush closets, it should be borne in mind that in districts provided with sanitary sewerage, the density of population, the overcrowding in tenement houses, which was relatively more than elsewhere, might have a bearing upon the transmission of the disease thru contact. In those sections of the city provided with public midden sheds where the population was less dense, the chance of infection might have been enhanced by the prevalence of flies. This will again be referred to later.

#### FOOD AND DRINKS

A comparatively small proportion of the population drinks fresh milk. Canned milk is mostly employed and mixed with coffee, tea, or in making ice-cream in houses. In fact, only about 6.55 per cent of the typhoid cases gave a history of having drunk fresh milk, and 70.67 per cent used canned milk, while no milk was used in 22.78 per cent of the cases. Moreover, if the milk was taken alone, it was usually boiled beforehand.

A proportion of 40.60 per cent of the cases had taken ice-cream from street peddlers, 23.98 per cent from public places, 2.59 per cent made at home, and the remaining 32.83 per cent gave no history of having had ice-cream before the onset of the disease. Although there appears a relatively high proportion of cases that had taken ice-cream, yet the latter in itself is not considered a main factor in the propagation of typhoid fever except thru subsequent contamination due to improper handling and distribution. In the interpretation of the above figures, it must be borne in mind that the preparation of ice-cream was permitted only in limited places under the supervision and control of the health authorities and that the biological examination of samples of ice-cream, made immediately after preparation, showed low count and negative contamination as indicated by the finding of *B. coli*.

Similarly, only 28.96 per cent of the cases had eaten in public restaurants leaving 71.04 per cent without history of having taken their meals in these places. Of all the cases investigated, only 13.66 per cent had eaten oysters, most of which, before consumption, were submerged in boiling water. Raw vegetables were ingested by 11.28 per cent of the cases under investigation, cooked ones by 84.78, and no vegetables by 3.94 per cent.

### FLIES

The epidemiological notes indicate that 95.48 per cent of the cases occurred in houses where there were few or numerous flies against 4.51 per cent in those where flies were said to be absent. These agents undoubtedly constitute one of the factors concerned in the transmission of the infection from insanitary localities.

If it be admitted that where flies are numerous the general sanitation is poor, the prevalence of the disease in less populated areas might be explained partly in relation to such insanitary surrounding, not to say less of the insanitary habit of living among the inhabitants therein.

### SANITARY CONDITION

It is quite difficult if not impossible to classify the population as living in excellent, good, fair, and poor environment. In fact, the classification as regards the degree of sanitary condition seems rather relative depending upon the judgment of the investigator. However, it can be safely admitted that the disease was comparatively more prevalent in houses where compliance with sanitary requirements was lax. This is shown by the fact that only 0.55 per cent of the cases occurred in houses where the premises were classified as excellent, 11.76 per cent in houses and premises classified as good, and 87.69 per cent in those determined as fair and poor.

It would not be amiss to repeat as a factor, in this connection, the overcrowding that exists in many homes of several districts of the city. In fact, insanitary condition has almost always been found hand in hand with excessive overcrowding which played an important rôle in the transmission of the disease by contact, taking into consideration that cases were not usually isolated earlier than in the second or third week of the disease.



## CONTACT

Most of the cases contracted the disease in the city as only 18.99 percent gave a history of having absented themselves therefrom within one month before the onset. Of the cases investigated, approximately 17.35 per cent gave a history of having been in direct contact, within the incubation period, with actual typhoid cases.

As has been said, contact infection has probably played a greater influence in the transmission of the disease in houses provided with sanitary facilities because of the inevitable overcrowding. In the study of the cases of the year 1924, the relative frequency of occurrence of infection not only in the same house but also in the same vicinity is striking and illustrative. In this investigation, the cases of typhoid fever that occurred among residents of the city within the years 1922, 1923, and 1924, have been studied in more detail. Accordingly, the location of each case has been carefully studied in relation with all and every case occurring in and around the same house or vicinity. This study revealed the fact that there were 188 presumptive foci of infection during 1924. Around those foci, there could be traced an aggregate of 399 or 53.29 per cent of the cases as having had possible contact, either directly or otherwise. A great majority of them were in the neighborhood of stables where flies were prevalent. During the years 1922 and 1923, 679 cases representing 28.87 per cent of the investigated cases apparently acquired the infection thru contact around the same 188 foci. Furthermore, in each of 226 houses, there occurred 2 or more cases within the last 3 years. The following table illustrates the above facts:

TABLE IX.—Showing the number of typhoid cases found in certain places of the city considered as presumptive foci of infection

Focus No.	Location Street house number	Cases registered			
		1922	1923	1924	Total
2	Aceiteros—from 510 to 515.....	3	3	3	9
8	Anacleto—from 1333 to 1362.....	2	3	1	6
10	Anak ng Bayan—from 1000 to 1051.....	7	5	1	13
11	Anda—from 131 to 152.....	3	3	2	6
13	Andalucia—from 1311 to 1342.....	3	2	1	6
14	Antonio Rivera—from 100 to 1071.....	2	2	6	10
15	Asuncion—from 513 to 563.....	2	2	3	7
16	Asuncion—from 303 to 360.....	6	2	5	13
19	Benavides—from 1000 to 1029.....	1	0	0	1
24	Caballeros—from 319 to 329.....	3	2	2	7
25	Cabildo—from 311 to 391.....	1	3	2	6
26	Cabildo—from 203 to 267.....	5	3	1	9
30	Dagupan—from 1208 to 1273.....	2	4	2	8
32	Dapitan—from 10 to 85.....	8	1	2	6
35	Echague—from 711 to 724.....	3	1	2	6

TABLE IX.—Showing the number of typhoid cases found in certain places of the city considered as presumptive foci of infection—Continued

Focus No.	Location Street house number	Cases registered			
		1922	1923	1924	Total
38	El Dorado—from 106 to 116.....	3	1	3	7
39	El Dorado—from 406 to 441.....	2	1	3	6
42	Felix Huertas—from 1330 to 1374.....	1	0	6	7
43	Felix Huertas—from 1806 to 1880.....	0	3	3	6
48	General Luna—from 210 to 270.....	5	2	1	8
49	Gutierrez—from 120 to 152.....	2	5	2	9
51	Ilaya—from 831 to 851.....	2	3	2	7
52	Isabel (interior)—from 312 to 372.....	5	1	5	11
53	Isabel—from 412 to 477.....	5	5	2	12
55	Juan Luna—from 728 to 794.....	4	3	5	12
57	Juan Luna—from 2307 to 2371.....	3	5	5	13
58	Juan Luna (interior)—from 1842 to 1880.....	6	0	2	8
59	Juan Luna (interior)—from 2206 to 2297.....	2	6	6	14
67	Legaspi—from 57 to 97.....	2	1	5	8
68	Lepanto—from 711 to 728.....	2	3	3	8
69	Leveriza—from 1119 to 1175.....	3	3	3	9
70	Loreto—from 11 to 96.....	1	2	4	7
73	M. H. del Pilar—from 1545 to 1571.....	3	3	2	8
77	Madrid (interior)—from 319 to 352.....	3	2	1	6
78	Madrid—from 402 to 420.....	5	0	1	6
79	Magallanes—from 49 to 84.....	6	4	2	12
80	Magallanes—from 151 to 181.....	4	2	1	7
81	Magdalena—from 603 to 643.....	4	1	4	9
83	Magdalena—from 931 to 973.....	0	2	6	8
84	Magdalena—from 1114 to 1184.....	6	4	2	12
89	Mayhaligue—from 807 to 827.....	1	1	4	6
90	Mayhaligue—from 201 to 247.....	4	1	5	10
91	Misericordia—from 503 to 571.....	3	7	2	12
96	Novaliches—from 220 to 258.....	2	3	2	7
100	O'Donnell—from 813 to 884.....	1	4	1	6
104	P. Gomez—from 512 to 539.....	3	1	2	5
106	P. Herrera—from 503 to 552.....	6	1	3	10
109	P. Rada—from 407 to 475.....	2	4	0	6
110	Palomar—from 110 to 181.....	1	2	3	6
116	Quesada—from 263 to 289.....	6	0	1	7
122	Ricafort—from 306 to 347.....	1	3	2	6
124	Rizal Avenue—from 713 to 719.....	0	1	5	6
127	Sagat—from 302 to 320.....	3	4	1	8
128	San Andres—from 1424 to 1489.....	1	4	1	6
130	San Juan de Letrán—from 60 to 96.....	5	1	5	11
131	San Anton.....	0	3	4	7
134	San Marcelino—from 807 to 832.....	2	4	1	7
138	Sande—from 1320 to 1364.....	2	4	2	8
140	Santa Potenciana—from 8.....	0	5	1	6
144	Sevilla—from 501 to 577.....	6	5	4	15
145	Singalong—from 1010 to 1094.....	3	7	5	15
146	Singalong (interior)—from 1208 to 1286.....	2	3	2	7
147	Singalong—from 1119 to 1174.....	1	2	3	6
149	Solana—from 213 to 281.....	8	3	1	12
150	Solana—from 120 to 196.....	8	4	2	14
152	Soler—from 214 to 257.....	3	1	2	6
156	Sulucan—from 305 to 388.....	8	1	1	10
157	Sulucan (interior)—from 726 to 795.....	1	4	1	6
164	Tayuman—from 101 to 108.....	1	3	2	6
165	Teresa (interior)—from 5 to 14.....	2	3	2	7
166	Trabajo—from 904 to 929.....	2	1	3	6
167	Trabajo—from 603 to 621.....	2	0	4	6
168	Velasquez—from 923 to 890.....	4	2	1	7
169	Velasquez—from 732 to 776.....	7	2	2	11
174	Azcarraga—from 2021 to 2022.....	0	6	1	7
175	Azcarraga—from 1510 to 1563.....	6	7	1	14
176	San Marcelino—from 1007 to 1065.....	3	6	1	10

The above data clearly indicate that the infection has been more or less progressive around many foci in the city and this observation becomes more striking if we consider that convalescents were carriers of the causative agent for several months after the recovery. Besides these, there were "healthy" carriers of the infection scattered throughout the city, the detection of

whom remains still a problem to be solved. The proportionate occurrence of carriers in 1922, 1923, and 1924 among contacts, food handlers, convalescents, water carriers, and dead bodies, as determined by stool examination, is as follows:

TABLE X.—*Showing the incidence of typhoid carriers among those examined in the city*

Specification	1922		1923		1924 <sup>1</sup>	
	Number examined	Per cent positive	Number examined	Per cent positive	Number examined	Per cent positive
Contacts.....	5,403	0.981	2,897	0.207	1,428	0.070
Food handlers.....	3,327	1.262	5,345	0.150	2,869	0.035
Convalescents.....	448	1.339	325	1.231	116	0.862
Water carriers.....	77	6.493	66	0	0	0
Cases who died of miscellaneous diseases..	20	10.000	15	0	1	0

<sup>1</sup> Up to and including August

In other words, during almost three years ending August, 1924, positive typhoid carriers occurred in the proportion of 6.17 per 1,000 of the contacts, 4.42 per 1,000 of the food handlers, 12.37 of the convalescent, 34.96 of the water carriers, and 55.55 of the cases who died of miscellaneous diseases. As far as the above groups of population are concerned, carriers, passing typhoid organism in their stools during the last 3 years, exist in a total of 5.77 per 1,000. These together with actual cases are most likely the probable sources and some of the chief transmitters of typhoid infection in the city. It follows then that, altho the improvement of general sanitation would undoubtedly reduce the incidence of typhoid, yet the problem of eradication will not, it is believed, be completely solved until these carriers are rendered permanently harmless.

## VI. METHODS OF CONTROL

Approximately 95 per cent of the cases that occurred during the year were hospitalized, the majority in the San Lazaro and Philippine General Hospitals. Hospitalization has been advised in all cases and compulsory in those that did not have facilities for the proper isolation of the patients. Only in instances where the family physician guaranteed the safety of those who came in contact with the patient was the latter allowed to be isolated in the house.

However, general disinfection was enforced in all cases and the families were provided free of charge with disinfectants from the Health Service for hand washing and stool disinfection. The contacts were instructed how to take care of them-

selves to prevent further infection. Precautionary measures were taken and good nursing given to almost all the cases reported. Convalescents confined in the hospitals were kept there until three negative stool examinations at irregular intervals were obtained. Detected carriers were hospitalized and treated until they were no longer potential sources of infection.

Systematic antityphoid inoculations of the public but especially the contacts were continued during the year. A proportion of 17.87 per cent of the cases were those who had received complete series of injections, 18.14 per cent 1 or 2 injections, while 63.98 per cent had none. The immunizing value of the antityphoid vaccine may be shown by the fact that the specific case incidence among those with three injections was 0.65 per 1,000; those with first, second, and third injections taken collectively 1.28; while among the unvaccinated population, the incidence rate was 8.44. Moreover, the case fatality or the proportionate number of deaths per 100 cases among the vaccinated was not more than 30 while that among the unvaccinated was not less than 27. It should be stated, in this connection, that for the first and second injections, mixed typhoid and cholera vaccine was used, and for the third, pure typhoid and paratyphoid vaccine only.

But, a very interesting phenomenon was observed in the study of the frequency of occurrence of the cases at different time after the last inoculation. It seems as if proportionally fewer number of cases developed one year after the last injection, whether it be first, second, or third. This is illustrated by the following table and by Chart IX.

TABLE XI.—*Showing the percentage distribution of the typhoid cases in the city during 1924, that were previously inoculated, by dates of onset from the last injection.*

Inoculation	On set from last injection								
	Under 5 months	3 to under 6 months	6 to under 9 months	9 to under 12 months	12 to under 15 months	15 to under 18 months	18 to under 21 months	21 to under 24 months	2 years and over
First No. = 65.....	27.69	15.30	12.31	13.85	24.62	0	0	0	6.15
Second No. = 68.....	25.00	10.29	14.71	16.18	19.12	1.47	0	1.47	11.76
Third No. = 131.....	11.45	16.79	26.72	12.21	23.66	0.76	0.76	0	7.63
Total No. = 264....	18.94	14.77	20.07	13.64	22.73	0.76	0.38	0.38	8.33

Practically the same phenomenon was observed in the distribution of the cases that occurred in the city during 1923. What this phenomenon is due to, we are not yet in a position to ex-

plain; but epidemiologically, it seems that the vaccination affords higher protection within the second year after the last inoculation. The large number of cases reported among persons within the first three months after immunization, might be explained by the fact that most of them were contacts of actual cases. This is, however, not true in cases developing the disease after 3 months from the date of the last inoculation. At any rate, the phenomenon deserves further study.

## VII. SUMMARY AND CONCLUSION

1. It was ascertained from this study that the morbidity and mortality rates from typhoid fever in the city have been decreasing since 1922, such being, respectively, 242.52 and 69.80 per 100,000 population in 1924. The case fatality from 1922 to 1924 ranged from 25.23 per cent to 28.86 per cent. Previous to 1922, the proportionate number of deaths per 100 cases was relatively higher, showing that the notification of the cases might have been at fault. Moreover, the mean number of cases reported per week during the last five years ending December, 1923, was 14, almost the same as in 1924, in spite of the epidemics of 1922 and 1923. It was also shown that the mean values in the number of reported cases by month during 1921 and 1924 did not present any significant difference, having regard to the probable error involved.

2. Improved notification was instituted in 1919, and positive results along that line were beginning to be felt in 1921. It may likewise be said that in 1921, improvement in the diagnosis was made. Those were intensified in 1924 with the result that there were reported 745 cases with 215 deaths during the year, out of which 736 cases were investigated epidemiologically.

3. Of the reported cases in 1924, about 85 to 90 per cent were confirmed by laboratory methods, with the following positive results; widal reaction 37.74 per cent, hæcolture 54.26 per cent when the blood was taken within the first two weeks of the disease and 36.17 per cent within the next two weeks, leaving 9.57 per cent within the undetermined stage of what appeared clinically to be typhoid. Stool examination was positive in 5.54 per cent of the cases and urine in 1.01 per cent. At autopsy, positive lesions were found in 40 per cent of those who died as typhoid suspects.

4. Over 75 per cent of the cases occurred in the second and third decades of life, the age-specific morbidity rates, respectively, were 430.27 and 382.39 against the average of 241.87

per 100,000. The sex incidence was unimportant, altho the majority of the cases and deaths were males.

5. More than 50 per cent of the cases that occurred during 1924, were laborers and students. A proportion of 22.92 per cent of the cases were food handlers; 17.60 per cent merchants, Government employees and professional men; and 7.70 of undetermined occupation.

6. Over 90 per cent of the cases were Filipinos. The incidence rate among them was 237.44 per 100,000, among the Chinese 184.81, among the Spaniards 153.45, among other Europeans 88.81, and among Americans 63.82. Paratyphoid "A" fever was rather frequent among the foreigners, especially the Japanese.

7. In 1924, the disease was more prevalent during the hot season of the year.

8. The incidence rate among those using city water for drinking was 226.73 per 100,000 population while the rate among those using water from other sources was 253.24. Moreover, there is no direct chronological relation between the monthly incidence of typhoid (by dates of onset) and the results of the bacteriological examination of the city water taken at different points. Neither could it be shown that the artesian well water had any direct relationship to the occurrence of the disease. However, it has been found that the water became contaminated with *B. Coli* thru careless handling on the part of the water carriers or of members of the household. It is probable that thru this means, the disease became disseminated.

9. Relatively high incidence rates were observed among those using public midden shed and flush closets, they being 322.98 and 272.56 per 100,000, respectively. This was probably due to the fact that in those districts in which the public midden shed was used, the flies were prevalent and those might have been the chief transmitters therein, while in other districts provided with sanitary sewage disposal, overcrowding and consequently contact infection might have been the principal factor.

10. Milk as a source of infection has been ruled out. However, a large proportion of the cases gave a history of having taken ice-cream sold by street peddlers and at public places. The eating at public restaurants, the consumption of oysters and raw vegetables apparently have not been of epidemiological importance.

11. Flies probably played a significant rôle in the dissemination of the infection. The disease was found prevalent in houses where the sanitary conditions were poor. In sparsely populated districts where the environment was poor and the habit of the people insanitary, flies have been prevalent and the typhoid incidence was relatively high.

12. It has been shown that contact infection played a great part in the propagation of the disease. There were found 188 foci during 1924, around which an aggregate of 399 or 53.29 per cent of the cases developed. Similar phenomena were observed among the cases that occurred in 1922 and 1923. The infection was mostly likely transmitted thru contact, either directly or otherwise. In each of 226 houses there occurred 2 or more cases.

13. Typhoid carriers were found among contacts, convalescents, food handlers, water carriers, and cases who died of miscellaneous diseases. In their stools, the organism was recovered. The positive carrier rate was found to be 5.77 per 1,000 for the last 5 years. Carriers doubtless have been responsible for a great majority of the cases that developed.

14. In view of the above findings, we believe that the typhoid situation in the city, altho it may be considered normal under the present circumstances, remains nevertheless a complex problem. The sources and avenues of infection are numerous. The insanitary handling of the water, the defective sewage disposal in many sections, the prevalence of flies, the insanitary environment and living conditions of the people, the overcrowding in tenement houses and elsewhere, and the presence of typhoid carriers engaged in food handling and various other occupations in the city all conjointly contribute to make up the so-called epidemiological typhoid-complex and explain the prevalence of the disease in the city.

#### VIII. RECOMMENDATIONS

We, therefore, recommend the following general measures, based upon the foregoing studies:

1. That efforts be made to further emphasize the importance and necessity for the prompt diagnosis and notification of cases to the Health Service.

2. That all confirmed cases be hospitalized or strictly isolated under the guarantee of a competent physician. In either case,

the house where the disease developed should be thoroughly disinfected and the household advised to use disinfectants for their hands, the patient's discharges, soiled clothings and beddings, or anything that comes in contact with the patient.

3. That individuals who have had typhoid be closely observed and be considered as potential carriers for a period of three months after recovery. That, three months after recovery so far as is practicable, three consecutive bacteriological examinations be made of the stools and urine to determine whether typhoid or paratyphoid bacilli still are being excreted (chronic carrier state). The three stool specimens should be collected after the administration of saline purgative at intervals of not less than two nor more than six days.

4. That the search for and detection of carriers of the infective agent among convalescents, food handlers, water carriers, contacts, or what not, be pushed vigorously. Those found to be positive should be hospitalized and treated, and should be held under observation until they are no longer a menace to public health. The regulations governing carriers and those who have had typhoid should be strictly enforced by the health stations.

5. That due to insufficient supply of drinking water which does not even extend actually to all parts of the city and in order to diminish the incidence of not only typhoid but also other intestinal diseases, the Angat project for furnishing a potable water supply for the city be developed as rapidly as possible. Meanwhile, strict supervision should be exercised over those engaged in collecting and delivering water for public consumption.

6. That the sanitary control and supervision over hotels, restaurants, markets tiendas, and other places where food or food stuffs are made, manufactured, sold, or offered for sale including milk and its by-products, be vigorously maintained. No food handler should be allowed to engaged in that occupation unless he can present satisfactory evidences from a reputable physician that he is free from any communicable diseases.

7. That general sanitation with respect to cleanliness, sewage and refuse disposal, the proper disposition of garbage and manures, the measures for the prevention of the spread of flies and other insects, the filling up of low lands and drainage of stagnant waters, and the removal of nuisances in general, be given more active attention.



8. That systematic anti-typhoid inoculations of the public as well as contacts, as heretofore done, be continued. Attempts should be made to give three injections in order to insure maximum immunity to last at least three years. Special attention should be given to the immunization by prophylactic vaccination of foodhandlers, and those who handle water for public use.

9. That public health education of the masses as regards the possible means and measures they should adopt in order to protect themselves from the infection, be persistently carried out, and that more vigorous efforts be made to teach the convalescent typhoid patients, that through careless habits they are actually potential sources of danger to their friends and their families, and thus attempt to gain their coöperation in preventing the spread of typhoid fever.

## THE TRACHOMA CAMPAIGN IN PANGASINAN

By Dr. CONSTANTINO LIMJOCO

*District Health Officer, Province of Pangasinan*

This article is written in appreciation of the aid extended by the Philippine Chapter of the American Red Cross in the campaign against the trachoma disease inaugurated in the Province of Pangasinan, and to satisfy a request from the Red Cross Supervising Nurse, Miss Irene M. Abelgas, for an article on same.

It is common knowledge that the trachoma disease is an imported one caused by still an unidentified germ, for which reason the exact nature of its infection is unknown; although observations and experiments conducted with men and monkeys have demonstrated the very probable means of contamination. It is found common among children and at the age of puberty, probably because of their scarce knowledge of the necessary personal hygiene and because of their attending schools, colleges and asylums which are places nearly always crowded; but this is ground to believe in the immunity of adults among whom the disease is also found, altho in fewer cases. The degree of propagation of the disease in certain countries has more or less depended upon the sanitary and hygienic conditions of the people found in them. The trachoma secretant forms are proven to be more contagious than the dry ones, the former being easily transmitted through objects from the direct touch of the patient or by the secretions being carried through dirt or dust in like manner as certain skin diseases or tuberculosis are transmitted.

The present Act No. 3029 compels health officers to conduct the physical examination of students for two reasons: first, to discover and isolate those who suffer from communicable diseases in order to protect the community, and, second, to correct physical defects.

In order to carry out more easily and effectively the physical examination of all pupils and students of the public schools the work has been distributed among the presidents of Sanitary Divisions. The district health officer's office has also been allotted the students of the Pangasinan High School.

During the examination of the pupils of the high school conducted last June, it was discovered to our surprise that the trachoma disease has considerably increased from 1 per cent to 10 per cent; and pursuant to official orders we excluded from school about 300 patients of trachoma out of 3,836 students. This measure, which was equivalent to depriving such large number of students of their future, has raised a general clamor, and as a first step in answer thereto the cases were referred to the provincial hospital for treatment. However, on account of the very limited number of beds available then, the provincial governor requested the Director of Health to authorize the opening of an emergency hospital in Lingayen which began its operation on July 13, 1927.

From the beginning of its existence, the Red Cross Nurse of the Pangasinan Branch, Miss Flaviana Collado, has been working in the clinic in effective coöperation with three other nurses of the provincial health service serving from 10 to 14 hours daily in the hospital and ten days after, two other Red Cross Nurses from the Chapter, Misses Beatriz de Armas and Tomasa Danao, were detailed to relieve the nurses of the Health Service. Thanks to the coöperation of the Cross Nurses we were able to maintain for more than two months' period a traveling emergency clinic, the outbreak of dysentery having made it necessary to recall the public health nurses to their respective districts.

The traveling trachoma clinic has been established in the municipalities of Lingayen, Bayambang, Rosales, Urdaneta, San Nicolas, Dasol, and Alaminos. As a general rule the municipal presidents of the municipalities mentioned have not only given their personal coöperation but have been instrumental in influencing the municipal councils to set aside appropriations of from ₱40 to ₱200 as emergency funds to help in the expense of operation of the clinics for the service of janitors, water carriers, ice, querosene, etc.

The following is a list of the number of days of operation of the clinics and the number of trachoma cases operated in each town:

Town	Number of operation	Period of work
Lingayen.....	565	July 13 to August 6.
Bayambang.....	313	August 9 to August 21.
Rosales.....	205	August 22 to August 30.
Urdaneta.....	84	August 31 to September 10.
San Nicolas.....	151	September 11 to September 21.
Dansol.....	118	September 23 to September 28.
Alaminos.....		Inaugurated September 29 (Up to present date).
Total.....	1,435	

NOTE:—In the provincial hospital they have operated on around 400 cases.

From the above figures there is no doubt that the campaign has put a check to the spread of the disease although the refusal of a number of patients to submit to treatment has placed a difficult obstacle on the way of a complete extermination of the disease. Furthermore, in the course of our inspections, we have noted that there were sometimes as many as three or four people affected in one family and there was, therefore, no positive security against the recurrence of the disease in a patient treated in the clinics, from where the patients had to be dismissed after two or three days in order to give way for other patients. This situation demands that follow-up-work be made a compliment of the clinic work in order to obtain lasting results. As a rule the cases handled in the clinics were only reported as "improved."

The operation employed consists of the expressing process with the use of special forceps and under local anæsthesia.

In certain towns adults have been operated on besides the students, and the operation was free.

The personnel of the traveling clinic was composed of two physicians—the assistant district health officer and the local president of Sanitary Division—four nurses, two janitors, and one water carrier. At the beginning of its establishments in the first towns visited we have found it necessary to call the additional services of the next neighboring president of Sanitary Division to coöperate in the clinic work. Doctor Villacorta of the Provincial Hospital and the undersigned had at some times helped and supervised the work in the clinics.

The emergency trachoma clinics have served and still are serving as a propaganda of the work and varied activities, not

only of the Public Health Service but also of the Red Cross, along the humanitarian work of saving many students from this disease, it being a fact that in their ardent desire for education they have not considered the expenses or sacrifices needed for their treatment in order to get readmitted.

If it had been a gratifying sight to see fathers of school children take them to the clinics in order that their studies might not be interrupted, on the other hand, there were people who refused to have their children cured, preferring that they be indefinitely excluded from the schools of the Government. The advice and persuasions on the part of municipal officials and students were not convincing enough to this group of selfish ignorant people. For this reason I would recommend that a more strict legislation be passed to protect and safeguard the health of the community.

We have also observed with regret that some of the students declared sick with trachoma abandoned the schools of the Government to enter private schools where no rigorous inspections are conducted and thus apparently they enjoy certain immunity. It is sad to confess that on two occasions, before the transfer of the emergency clinic to Bayambang, this office offered its services free to the directress of the girls' college in Lingayen, but the latter had refused and we had no time to insist as the disease has been gaining ground day by day and we had to direct our attention to the elementary schools where the pupils affected are mostly among the poor class and the work would be more meritorious.

One of the criticisms flung by the Monroe Commission with respect to the physical examination of the students was that they were not given due treatment and that physical defects were not corrected, which, for sure, must have some foundation for the reason that the Health Service, in being much burdened with work, can only give secondary importance to the public schools. Were the Health Service to give the full attention needed in the schools we would find ourselves abandoning the work of sanitation which is of primary importance in our municipalities. It would therefore be of advantage of the schools to have their own physicians who could conduct this work more systematically and regularly instead of sporadically as in the present case.

We also note that the income of the Junior Red Cross is steadily increasing yearly but that the only activity carried out with the use of this fund is the dental work. It is believed

that it is about time when the Junior Red Cross service should be made to include clinics for eye, ear, nose, and throat, for if there are around two thousand trachoma patients in this province there must be about four thousand affected with tonsillities. And yet it is regretful to find that no campaign has ever been carried against the latter due to lack of funds.

In closing, the undersigned wishes to touch on the work rendered by the Red Cross nurses in the present campaign. The Chapter must be congratulated for the efficient work and effective coöperation rendered by the three nurses whose services following our emergency hospitals from town to town are found worthy of high commendation. The undersigned, therefore, wishes to thank the Chapter for its effective and hearty coöperation in this emergency.

# ON THE VALUE OF PRESENT METHODS OF TREATING LEPROSY <sup>1</sup>

Drs. H. W. WADE and C. B. LARA

*Chief Pathologist and Chief Physician, respectively, Culion Leper Colony,  
Philippine Health Service*

## [ Abstract ]

Until recent years leprosy treatment was so discouraging that it is desirable to ascertain whether the present optimism is justified by the facts. It is said that this is doubted by certain dermatologists who have treated small groups of unselected cases.

To avoid misunderstanding it is pointed out that in Philippine reports the term "leper" applies only to proven bacteriologically positive cases, and that the results reported are not affected by including the deformed "ex-leper" or the bacteriologically negative "clinical leper."

At the beginning of the antileprosy campaign in the Philippines, segregation was the sole weapon of attack. In 1908, Heiser introduced Dyer's treatment with chaulmoogra oil by mouth, but no case was made negative and kept so for two years by it, or by any other treatment used during this period. Later, after various trials, the Heiser-Mercado treatment was developed. Previous to 1913 only one leprosy patient had recovered and had been discharged, and that one had not been treated. In 1913, the first treated cases, apparently cured with the Mercado mixture, were discharged. Four were discharged in that year, and in 1915, two more, together with 23 from Culion; these last all showed neural stigmata, evidencing a natural tendency to recovery.

The percentages of patients treated who were discharged is not known. The percentage of negatives who remained so for two years is low. Mercado states that from 1910 to 1912, 24 cases treated by him "recovered, blood negative," and this does

---

<sup>1</sup> This paper was prepared at the request of Sir Leonard Rogers for presentation in a discussion of this subject at the Royal Society of Medicine, London.

not include any that may have become negative in the next year. Yet the number discharged from San Lazaro by the end of 1915 was only six.

At Culion the patients slowly became discouraged; from 1,500 under weekly treatment there in 1915, the number dwindled to some 700 in 1919, and remained at about that figure until 1922, though the total inmate population increased. At San Lazaro, comparatively few patients were held for continued treatment. However, some cases were discharged each year, totalling 84 for 1915 to 1921, inclusive, and with the four discharged in 1913 totalling 88 treated cases discharged previous to the present treatment period.

The frequently discussed development of the present treatment campaign, and the proposed modifications of the general antileprosy campaign are briefly set forth, preparatory to a statement of the results of recent treatment work. In this work three stations are now concerned San Lazaro, Cebu, and Culion.

According to a report published by Gavino and Tietze, kindly brought up to the end of 1925 for the present paper, a total of 250 cases had become negative at San Lazaro Hospital, and 115 had been discharged or parolled in the five years during which the modern treatment methods had been used. The latter figure included perhaps 20 to 25 that had at least been brought to the negative stage under the old treatment. Compared with the total numbers of cases treated these figures are probably comparatively high, as is to be expected of a treatment station where for the most part the more favorable cases are selected for continued treatment. Considering all factors, the comparison of 115 released in five years (average 23 per year) from San Lazaro alone, with 88 in the preceding seven years (average 12 per year) from both San Lazaro and Culion, is not without significance.

The Cebu Detention Camp did not begin to function as an active treatment station, from which cases are parolled and discharged, until some time after the expansion period. Nevertheless, 76 were parolled in the three years from 1923 to 1925, inclusive.

The treatment work at Culion, begun on a small scale in 1921, and expanded greatly in the following year, had resulted in a total of 629 negatives by November 1, 1926. This out of a total of somewhat less than 6,000 treated for a greater or less time, many of whom soon proved unsuitable for treatment and were accordingly dropped. To the same date, 358 had been released.



It is to be realized that this has been done in a large colony-town, with a population scattered over a large area, for the most part not under the close control possible only in a hospital-type institution, and comparatively few of whom are early enough to be considered really favorable for effective treatment.

From the total figures for releases here given, and such information as is available concerning more recent events, it is estimated that the releases from 1921 to the end of 1926 will reach 800 or more. In view of this impressive total it can not be doubted that present materials and methods are better than those heretofore available. This is true, though the proportion of cures in unselected more or less advanced cases does not approach a majority; it may be 12 to 20 per cent. This may be discouraging where only a few cases are treated, but is very encouraging in contrast with previous results. In leprosy treatment, as in cancer work, emphasis must be laid on treating the cases early in the disease.

## MISCELLANEOUS

---

### AGUSAN

The important accomplishment during the month in this province was the proper collection of garbage in the town of Butuan done thru the coöperation of other provincial officials. A truck of the district engineer's office paid by the provincial general fund was used for this purpose. With the employment of provincial prisoners, the cutting of big acacia trees, along the streets which began to be useless as decoration, made the town beautiful.

During the first day of the month, Butuan was maintained in a good sanitary condition, but after a week of continuous rainfall the water of the Agusan river began to rise and the town of Butuan was overflowed until the first day of the next month.

### ALBAY

During the month 52 cases of yaws were treated in Virac, 112 sanitary orders were issued, many stray dogs were killed in the market places, and 30 Antipolo closets were constructed as follows: Bacacay 2, Daraga 2, Guinobatan 10, Jovellar 3, Libog 1, Malilipot 4, Polangui 2, Tabaco 2, and Tiwi 4.

### BATAAN

The outstanding achievements accomplished during the month were the following:

Vaccination with mixed cholera and typhoid vaccines was performed successfully in the municipalities of this district.

Sample of water from Baisen river in Bagac was collected for bacteriological and chemical examination. This was done availing of the amount of ₱3,000 allotted for small water work in that municipality.

The smallpox vaccination was duly supervised. Inspection trips were made by the district health officers thru out the district and the personnel were found doing their work satisfactorily.

The health as well as the sanitary conditions in general were found satisfactory.

### CAMARINES NORTE

The general health condition of the province was normal. However, in the barrio of Gubat, cases of typhoid were discovered, and in the municipalities of Basud and Paracale, sporadic cases of dysentery were reported. Precautionary measures were taken for the control and supression of the above disease.

### CEBU

Inspection of the sanitary condition in the different municipalities, supervising the works of the personnel, inspection in the provincial jail;

in the Leper Hospital, investigation of the two sanitary inspectors who have been found committing some irregularities in the performance of their duties performing an autopsy of a suspected cases of poisoning with carbon tetrachloride administered by a private physician on request of the Provincial Fiscal.

The general health condition existing in the whole district during the month was very satisfactory. No epidemic of dangerous diseases had occurred, with the exception of some cases of measles in Daan Bantayan, and varicella in Medellon.

#### MASBATE

One of the most important events accomplished this month was the 1928 annual assembly of non-technical personnel; the assisting medical officers prepared their subject before the opening of the assembly. Then lectures were given in a concised and simple language in order that the sanitary inspectors could understand the subject matter.

Each lecturer made a verbal quizz after his talk, so that the sanitary inspectors might retain the most essential points treated in each subject. Practical field demonstration was given, especially in inspecting public market, restaurant, tiendas, and bakeries.

#### MINDORO

Important events accomplished were: Investigation and verification of the reported measles cases in Paco; inspection of the proposed barrio and cemetery sites and treatment of malaria cases among immigrants in Sitio Malayas, Banuro, Nauja; and attending session of Calapan Municipal Council thereby getting 10 per cent additional funds as municipal aid to health fund.

Generally speaking, the health condition in the district is normal. Dysentery situation in Lubang has shown an improvement as compared with that of the previous month.

#### TAYABAS

Due to one case with death of diptheria registered in Lucena, a survey for carrier has been started since February 20, 1928; 8 *contracts of deceased*, found three times negative, and 45 contacts in the school, all negatives.

#### ZAMBOANGA

The general health condition in this district during the month was normal. Among the diseases most prevalent in the district are: infantile beriberi, bronchopneumonia, influenza, diarrhea and intiritis (under one age), malaria and tuberculosis of all forms.

#### LEPROSY DRIVE IN U. S. IS BEARING FRUIT

The indefatigable devotion of Mrs. H. Windsor Wade in interesting the American people in behalf of the anti-leprosy campaign which is now being so successfully waged in the Philippines—is beginning to bear fruit. The Leonard Wood Memorial Committees in different States have been conducting drives to raise money for this work, which Mrs. Wade has so vividly described as the "resurrection of the living dead." One of the last public statements of the late General Wood was in behalf of the

lepers, for whom he always had such profound sympathy. Their is no tribute to his memory which is more fitting than raising money in his name to help the work at Culion.

Mrs. Wade's husband is now the head of that famous leprosy station. The story of Culion is at last well known America; how the island was set apart as a place where the lepers should be segregated; how the American Army doctors and French and Belgian nurses set about making the lives of these outcasts more happy, and how at last the scientists discovered a treatment which can check the disease and has even effected complete cures. But the work is not yet finished. The scientists do not yet know just how the disease is contracted. It cannot be diagnosed until it breaks out and is already well established. There is much to be done before this plague, which for thousands of years has struck terror into the hearts of mankind, can be eliminated.

More than a thousand lepers have been cured at Culion in the last three years. Thousands more could be cured—if only sufficient funds are available. To the credit of the Philippine Legislature, it must be admitted that, that body has recognized the need of supporting this work and has regularly appropriated as much as it could spare. But this must be supplemented by outside aid. General J. G. Harbord has organized a nation-wide campaign for this purpose. Wherever Mrs. Wade has gone and has told of the tragic conditions under which the lepers live in the Philippines she has met with instant response. The cause is one which deserves the assistance of every American.

## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of February, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1928<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	8,134
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,128
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>324,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I. MEISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
<b>Total.....</b>	<b>129,181</b>
<b>No. II. SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III. PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,847
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,937
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,663</b>
<b>Grand total.....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, FEBRUARY, 1928**

Date	Pres- sure mean <sup>1</sup>	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	760.85	26.0	34.0	6	20.4	6	27.9	28.4
11-20.....	61.06	25.9	32.4	13.15	21.4	16	27.9	28.2
21-29.....	61.15	25.6	33.4	29	20.2	23	27.5	27.9

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	74.9	78.4	1	66.4	9
11-20.....	71.6	78.6	11	62.4	15
21-29.....	73.1	83.4	28	65.6	21

Date	Prevailing direction	Wind			Atmidometer <sup>3</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	E quad	1,612.5	295.0	9	39.3	5.3	9
11-20.....	E quad	1,391.5	182.0	15	40.9	6.7	15
21-29.....	E quad	1,490.0	220.5	24	37.0	5.7	21

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	66-10	10-10	5	0.2	1
11-20.....	25-15	9-50	15	3.0	1
21-29.....	30-30	6-55	22	37.4	3

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>3</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	9	7	16	64.30
Filipinos.....	631	537	1,168	49.32
Spaniards.....	4	.....	4	25.77
Other Europeans.....	.....	3	3	33.55
Chinese.....	31	25	56	39.50
All Others.....	5	6	11	63.88
<b>Total and average.....</b>	<b>680</b>	<b>578</b>	<b>1,258</b>	<b>48.82</b>

**NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MEJIC:</b>							
1. Tondo.....	175	154	329	11	10	21	350
2. San Nicolas.....	40	34	74	2	5	7	81
3. Binondo.....	24	9	33	1	.....	1	34
<b>Total.....</b>	<b>239</b>	<b>197</b>	<b>436</b>	<b>14</b>	<b>15</b>	<b>29</b>	<b>465</b>
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	75	76	151	4	5	9	160
5. Quiapo.....	37	14	51	1	.....	1	52
6. San Miguel.....	10	3	13	1	.....	1	14
7. Sampaloc.....	100	90	190	6	5	11	201
<b>Total.....</b>	<b>222</b>	<b>183</b>	<b>405</b>	<b>12</b>	<b>10</b>	<b>22</b>	<b>427</b>
<b>No. III, PACO:</b>							
8. Port Area.....	.....	.....	.....	.....	.....	.....	.....
9. Intramuros.....	32	27	59	.....	1	1	60
10. Ermita.....	43	33	76	.....	4	4	80
11. Malate.....	57	46	103	5	3	8	111
12. Paco.....	31	23	54	1	2	3	57
13. Pandacan.....	8	19	27	2	2	4	31
14. Santa Ana.....	14	13	27	.....	.....	.....	27
<b>Total.....</b>	<b>185</b>	<b>161</b>	<b>346</b>	<b>8</b>	<b>12</b>	<b>20</b>	<b>366</b>
<b>Grand total.....</b>	<b>646</b>	<b>541</b>	<b>1,187</b>	<b>34</b>	<b>37</b>	<b>71</b>	<b>1,258</b>

Attended by physicians: living, 414; stillbirths, 21.

Attended by midwives: living, 81, stillbirths, 0.

Attended by families: living 763; stillbirths, 18.

**NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE  
CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	1	.....	1	4.02
Filipinos.....	285	255	540	22.80
Spaniards.....	1	.....	1	6.41
Other Europeans.....	.....	.....	.....	.....
Chinese.....	16	6	22	15.52
All Others.....	1	1	2	11.52
<b>Total and average.....</b>	<b>304</b>	<b>262</b>	<b>566</b>	<b>21.97</b>

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA  
BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, Msisic:</b>			
1. Tondo.....	98	83	181
2. San Nicolas.....	21	20	41
3. Binondo.....	9	10	19
<b>Total.....</b>	<b>128</b>	<b>113</b>	<b>241</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	45	30	75
5. Quiapo.....	5	11	16
6. San Miguel.....	5	6	11
7. Sampaloc.....	45	43	88
<b>Total.....</b>	<b>100</b>	<b>90</b>	<b>190</b>
<b>No. III, PACO:</b>			
8. Port Area.....	14	9	23
9. Intramuros.....	10	10	20
10. Ermita.....	21	25	46
11. Malate.....	17	7	24
12. Paco.....	5	5	10
13. Pandacan.....	9	3	12
14. Santa Ana.....	.....	.....	.....
<b>Total.....</b>	<b>76</b>	<b>59</b>	<b>135</b>
<b>Grand total.....</b>	<b>304</b>	<b>262</b>	<b>566</b>

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	108	87
Divorced.....	.....	1
Widowed.....	33	62
Single.....	224	160
Conditions not stated.....	2	.....
<b>Total.....</b>	<b>367</b>	<b>310</b>
<b>Grand total.....</b>	<b>677</b>	<b>.....</b>

Stillbirths .....

39



## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	98	73	10	5	186
1 year plus.....	23	22	3	4	52
2 years plus.....	12	8	2	1	23
3 years plus.....	3	2	1		6
4 years plus.....	4	4			8
5 to 9 years.....	8	7		1	16
10 to 14 years.....	4	3	2	1	10
15 to 19 years.....	17	6	2	5	30
20 to 24 years.....	17	14	6	5	42
25 to 29 years.....	17	20	5	2	44
30 to 34 years.....	9	11	2	8	30
35 to 39 years.....	8	11	3	8	30
40 to 44 years.....	8	10	7	2	27
45 to 49 years.....	17	10	4	2	33
50 to 54 years.....	7	2	4	1	14
55 to 59 years.....	12	7	5	2	26
60 to 64 years.....	9	9	3		21
65 to 69 years.....	6	4	2		12
70 to 74 years.....	6	14			20
75 to 79 years.....	7	5			12
80 to 84 years.....	5	6	1		12
85 to 89 years.....	3	5			8
90 to 94 years.....	1	6	1		8
95 to 99 years.....	2	2			4
100 years and over.....	1	1			2
Age not stated.....					
Total.....	304	262	63	47	676

One female Filipino 24 years of age, permanent residence unknown, not included in the above table.

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....			3	6					1				10
10	a. Malarial fever.....			2										2
11	Diphtheria.....			3										3
	Influenza.....													
	a. With pulmonary complications specified.....				1					1				1
	b. Without pulmonary complications specified.....													1
	Dysentery:													
	b. Bacillary.....			2	1					1				4
	c. Unspecified or due to other causes.....				1									1
29	Tetanus:													
	a. Umbilical.....													
	b. Others.....			1	1									2
31	Tuberculosis of the respiratory system.....			76	66					5				147
32	Tuberculosis of the meninges and central nervous system.....			1	5									6
33	Tuberculosis of the intestines and peritoneum.....			1	2									3
34	Tuberculosis of the vertebral column.....				1									1
36	Tuberculosis of other organs:													
	c. Tuberculosis of the lymphatic system (mesenteric and retroperitoneal glands excepted).....			2										2
37	Disseminated tuberculosis:													
	a. Acute.....			1	1									2
	b. Chronic or unspecified.....				2									2
38	Syphilis.....			1	1									2
41	Purulent infection, septicemia.....			1										2
48-69	<i>II. General diseases not included in Class I</i>													
48	Cancer and other malignant tumors of the buccal cavity.....			2	1									3
44	Cancer and other malignant tumors of the stomach, liver.....													







# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

102

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....				5									5
11	Malaria:													
	a. Malarial fever.....				2			1		1				7
16	Influenza:													
	b. Without pulmonary complications specified.			1										1
	Dysentery:													
	a. Amebic.....	1								1				2
	b. Bacillary.....				1									1
	c. Unspecified or due to other causes.....			1										1
20	Leprosy.....				1									1
28	Rabies.....			1										1
29	Tetanus:													
	a. Others.....													1
31	Tuberculosis of the respiratory system.....			1										1
32	Tuberculosis of the meninges and central nervous system.....			6								1		15
33	Tuberculosis of the intestines and peritoneum.....				1									1
35	Tuberculosis of the joints.....			1										1
43-69	<i>II. General diseases not included in Class I</i>													
44	Cancer and other malignant tumors of the stomach, liver.....													2
52	Chronic rheumatism, osteoarthritis, gout.....			2										1
57	Diabetes mellitus.....			1										1
60	Diseases of the thyroid gland:				1									1
	a. Exophthalmic goiter.....				1									1
62	Diseases of the thymus gland.....				1									1
70-86	<i>III. Diseases of the nervous system and of the organs of special sense</i>													
71	Meningitis:													
	a. Simple meningitis.....													1
74	Cerebral hemorrhage, apoplexy:				1									3
	a. Cerebral hemorrhage.....													3
77	Other forms of mental alienation.....			2							1			2

90	Other diseases of the heart.....	2	2	4
92	Embolism and thrombosis (not cerebral).....	1	1	1
95	Hemorrhage without specified cause.....	1	1	1

#### 97-107 V. Diseases of the respiratory system

99	Bronchitis:			
	a. Acute.....	1	2	3
	b. Chronic.....	1		1
100	Bronchopneumonia.....			
101	a. Bronchopneumonia.....	9	4	13
	Pneumonia:			
	a. Lobar.....	3	2	1
102	Pleurisy.....	1	2	6
103	Gangrene of the lung.....	1		3
104				1

#### 108-127 VI. Diseases of the digestive system

111	Ulcer of the stomach and duodenum:			
	a. Ulcer of the stomach.....	1		1
	b. Ulcer of the duodenum.....	1		1
113	Diarrhea and enteritis (under 2 years of age).....	2		2
117	Appendicitis and typhlitis.....	2	1	3
122	Cirrhosis of the liver:			
	b. Not specified as alcoholic.....	3		3
124	Other diseases of the liver.....	1		1
126	Peritonitis without specified cause.....	1	1	1

#### 128-142 VII. Nonteneral diseases of the genito-urinary system and annexa

128	Acute nephritis (including unspecified under 10 years of age).....			1
129	Chronic nephritis (including unspecified 10 years and over).....	1		1
133	Diseases of the bladder.....	1		1

#### 143-150 VIII. The puerperal state

143	Accidents of pregnancy:			
	a. Abortion.....	1		1
145	Other accidents of labor:			
	a. Caesarean section.....	1		1
146	Puerperal septicemia.....	1		1
148	Puerperal albuminuria and convulsions.....	2		2

#### 151-154 IX. Diseases of the skin and of the cellular tissue

153	Acute abscess.....	2		2
154	Other diseases of the skin and annexa.....	1		1

NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

Internationalist numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
160-163	<i>XII. Early infancy</i>													
160	Congenital debility, icterus, and sclerema.....			1										1
162	Other diseases peculiar to early infancy.....			1										1
164-	<i>XIII. Old age</i>													
164	Senility.....			1										1
165-203	<i>XIV. External causes</i>													
198	Homicide by cutting or piercing instruments.....			1										1
	Total.....	1		56	45			2	1	3		1	1	110
	Grand total.....	1		101				3		3		2		110



INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF FEBRUARY, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month												
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days		Total under 1 month		
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All causes.....	108	78	17	12	16	10	2	3	2	1	4	1	41	27
COMMUNICABLE DISEASES:														
Typhoid and paratyphoid fever (1).....														
Smallpox (6).....														
Measles (7).....														
Whooping-cough (9).....														
Diphtheria (10).....														
Influenza (11).....														
Asiatic cholera (14).....														
Dysentery (16).....														
Meningococcus meningitis (24).....														
Other epidemic and endemic diseases (25).....														
Tetanus (29).....	1				1								1	
Other infectious diseases (1-42) <sup>1</sup> .....	2	3			1	1			1				1	1
Beriberi (55).....	6	5											1	1
Diseases of the nervous system (70; 71; 80; 85).....	3	3												
Respiratory diseases (99; 100; 101; 107).....	34	21						1			1		1	1
Gastro-intestinal diseases (108; 109; 113; 116; 127).....	15	10											1	1
Congenital malformation (159).....	2	1	1			1	1						2	1
Early infancy (160; 161; 162; 163).....	42	29	16	12	14	8	1	2	1	1	3		34	23
All other causes (43-206) <sup>1</sup> .....	3	6					1						1	1

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International list of causes of death.

**[Stillbirths not included]**

Causes of death	Age at death under 1 year																						Total under 1 year	
	1 month +		2 months +		3 months +		4 months +		5 months +		6 months +		7 months +		8 months +		9 months +		10 months +		11 months +			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
All causes .....	10	6	11	12	7	2	2	5	4	5	6	3	5	4	11	1	5	4	2	4	4	5	67	51
COMMUNICABLE DISEASES:																								
Typhoid and paratyphoid fever (1)																								
Smallpox (6)																								
Measles (7)																								
Whooping-cough (9)																								
Diphtheria (10)																								
Influenza (11)																								
Asiatic cholera (14)																								
Dysentery (16)																								
Meningococcus meningitis (24)																								
Other epidemic and endemic diseases (25)																								
Tetanus (29)																								
Other infectious diseases (1-42) 1										1					1	1		1					1	3
Beriberi (55)	1	1	1	2							1					1		1				1	5	4
Diseases of the nervous system (70; 71; 80; 86)																							1	3
Respiratory diseases (99; 100; 101; 107)	4		2	5	2	1	2	3	3	2	3	1	2	1	6	1	4	2	1	3	4	1	33	20
Gastro-intestinal diseases (108; 109; 113; 116; 116; 127)	1	2	3	1	5			1	1	1	1	2	1	1	2				1			1	15	9
Congenital malformation (169)																								
Early infancy (160; 161; 162; 163)	4	3	3	1	1	1							1	1	1								8	6
All other causes (43-205) 1			1	3				1		1											1	1	2	

Other than those specified above.

**NOTE.**—Number in parenthesis are the corresponding numbers in the International list of causes of death.

## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set . . . . .	20,764
Number of rats caught by spring traps . . . . .	2,759
Number of cage wire traps set . . . . .	493
Number of rats caught by cage wire traps . . . . .	0
Number and kind of baits (coconuts) . . . . .	21,750
Number of poison portions placed . . . . .	20,716
Number of rats found poisoned . . . . .	356
Number of rats killed by clubs and other weapons . . . . .	814
Number of rats found dead from other causes . . . . .	521
Total number of rats otherwise caught, found dead or killed . . . . .	4,450
Total number of rats sent to the laboratory for examination . . . . .	4,450
Total number of rats found positive for plague . . . . .	0

---

TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF FEBRUARY, 1928, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female		Cases	Deaths	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths			
I.	No. 1.....	6	1	4	1	1	1	.....	.....	7	1	4	1	11	2
	No. 2.....	3	1	.....	.....	.....	.....	2	.....	3	1	2	2	6	3
	No. 3.....	2	1	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	2	1
	No. 4.....	2	1	2	.....	.....	.....	1	.....	2	1	3	2	6	3
II.	No. 5.....	1	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	1	.....
	No. 6.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 7.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 8.....	3	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	3	.....
III.	No. 9.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 10.....	1	.....	1	.....	.....	.....	.....	.....	1	.....	1	.....	2	.....
	No. 11.....	.....	.....	2	1	.....	.....	.....	.....	1	.....	2	1	3	1
	No. 12.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	3	.....	3	.....
	No. 13.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....	20	3	12	3	1	1	3	3	21	4	15	6	36	10	

## REMARKS:

Cases confirmed as typhoid fever..... 36  
 Cases confirmed as paratyphoid fever..... 0  
 By autopsy.....  
 By blood culture.....  
 By blood reaction.....  
 By urine examination.....  
 By feces examination.....  
 By clinical symptoms.....  
 Cases reported among nonresident persons not included in the table..... 1  
 Deaths reported among nonresident persons not included in the table..... 17  
 Typhoid carrier—None..... 18  
 6

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.....	3	2	2				2	2	3	2	4	2	7	4
No. 1.....	1	1							1	1			1	1
No. 2.....														
No. 3.....	1								1				2	
No. 4.....			1								1			
No. 5.....														
No. 6.....														
No. 7.....	1				1				2				2	
No. 8.....														
No. 9.....														
No. 10.....														
No. 11.....			1						1		1		1	
No. 12.....	1								1				1	
No. 13.....														
No. 14.....														
Grand total.....	7	3	4		1		2	2	8	3	6	2	14	5

REMARKS:

Amoebic dysentery..... 1  
 Bacillary dysentery..... 11  
 Unspecified..... 2  
 Cases reported among nonresident persons not included in the table..... 6  
 Deaths reported among nonresident persons not included in the table..... 4  
 Dysentery carriers—3

**CHOLERA REPORTED DURING THE MONTH OF FEBRUARY, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total			
	Male		Female		Male		Female		Male		Female	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I... { No. 1..... No. 2..... No. 3..... No. 4.....												
II... { No. 5..... No. 6..... No. 7..... No. 8.....												
III... { No. 9..... No. 10..... No. 11..... No. 12..... No. 13..... No. 14.....												
Grand total.....												

**REMARKS:**

No nonresident case was reported during the month.

Cholera carriers—9

DIPHTHERIA REPORTED DURING THE MONTH OF FEBRUARY, 1928, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Grand total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.....	4	3							4	3			4	3
{ No. 1.....														
{ No. 2.....														
{ No. 3.....	1								1				1	
{ No. 4.....	3								3				3	
{ No. 5.....														
{ No. 6.....														
{ No. 7.....	1								1				1	
{ No. 8.....														
{ No. 9.....														
{ No. 10.....	3								3				3	
{ No. 11.....	2								2				2	
{ No. 12.....	1								1				1	
{ No. 13.....														
{ No. 14.....														
Grand total.....	15	3							15	3			21	3

REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carriers—11

1

0

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF FEBRUARY, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	17	8	2	
Varicella.....	16	18		
Varioloid.....				
Smallpox.....				
Measles.....	13	8		
Whooping cough.....				
Influenza.....	6	3	1	1
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	155	140	81	66
Tuberculosis of other organs.....	7	18	5	11
Beriberi, infantile.....	6	5	6	5
Beriberi, adults.....	1		1	

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	15	8	5	2
Varicella.....				
Varioloid.....				
Smallpox.....				
Measles.....	1	1		
Whooping cough.....				
Influenza.....	4		1	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	19	19	7	8
Tuberculosis of other organs.....	2	2	1	2
Beriberi, infantile.....				
Beriberi, adults.....				

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF FEBRUARY, 1928**

Sera and vaccines	On hand February 1, 1928	Received during the month	Total to be accounted for	Distrib- uted during the month	Remaining at the end of the month
Anti-diphtheric serum (tubes).....		338	338	334	4
Anti-dysenteric serum (ampoules).....	279	200	479	373	106
Anti-tetanic serum (units).....	100,000	1,000,000	1,100,000	400,000	700,000
Cholera vaccine (c.c.).....	9,600	12,000	21,600	19,200	2,400
Dried vaccine virus (units).....	79,600	100,000	179,600	107,000	72,600
Dysenteric vaccine (c. c.).....	7,980	30,000	37,980	22,920	15,060
Fresh vaccine virus (units).....	80,100	200,000	280,100	159,300	120,800
Mixed typhoid-cholera vaccine (c.c.).....	88,200	150,000	238,200	154,860	83,340
Normal horse serum (ampoules).....		6	6	6	
Typhoid vaccine (c.c.).....	4,380	27,000	31,380	21,660	9,720



REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF FEBRUARY, 1928

113

Health districts	Municipal districts	Vaccinations			Inspections of persons vaccinated					
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over	
			Never	Successfully	Unsuccessful	Positive	Negative	Positive	Negative	Positive
No. 1.....	Tondo.....	1,235	492	466	277	222	143	19	3	4
	San Nicolas.....	214	104	7	103	112	41	7	.....	241
	B'ondo.....	161	64	4	93	49	29	4	.....	119
	Santa Cruz.....	3,357	183	3,084	90	168	69	6	4	53
No. 2.....	Quiapo.....	827	105	.....	722	48	9	5	2,173	330
	San Miguel.....	112	19	20	73	13	1	1	3	182
	Sampaloc.....	3,278	251	2,952	75	178	60	11	2	25
	Port Area.....	.....	.....	.....	.....	.....	.....	.....	10	211
No. 3.....	Intramuros.....	105	51	10	44	84	32	2	1	87
	Ermita.....	183	121	2	60	108	51	5	1	52
	Malate.....	146	98	6	42	97	38	.....	.....	113
	Paco.....	310	180	73	57	22	16	9	1	97
	Pandacan.....	25	16	2	7	5	8	.....	1	126
	Santa Ana.....	39	20	5	14	14	10	1	.....	5
	Total.....	9,992	1,704	6,631	1,657	1,120	506	70	25	15
										334
										2,441
										865

Vaccine virus:		8,070 Units
Remainder from last month.....		7,300 Units
Received during the month.....		10,500 Units
Used during the month.....		4,870 Units
Remainder for next month.....		
Balance .....	15,370 Units	15,370 Units

ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF FEBRUARY, 1928

114

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.....	Tondo.....	38	20	32	22	70	42
	San Nicolas.....	9	7	4	4	13	11
	Binondo.....						
	Santa Cruz.....	9	2	7		16	2
No. 2.....	Quiapo.....						
	San Miguel.....						
	Sampaloc.....	14	11	8	5	22	16
	Port Area.....						
No. 3.....	Intramuros.....						
	Ermita.....						
	Malate.....						
	Paco.....	4		1		5	
	Pandacan.....						
	Santa Ana.....						
Total.....		74	40	52	31	126	71

Health districts	Municipal districts	Number of injections made in—												Total number of injections										
		Adults						Children																
		First injections			Second injections			Third injections			First injections									Second injections			Third injections	
		V.	R.		V.	R.		V.	R.		V.	R.		V.	R.		V.	R.		V.	R.		V.	R.
No. 1.	Tondo.	4,119	3,780	3,373	5,120	7	324	312	298	5,112	4,129	9,239	8,892	7,502										
	San Nicolas.	1,081	943	658	540					394	553	1,621	1,337	1,211										
	Binondo.	983	654	616	324																			
No. 2.	Santa Cruz.	2,983	3,023	2,997	3,623					3,351	3,015	6,606	6,374	6,012										
	Quiapo.	954	713	512	414					380	150	1,368	1,093	662										
	San Miguel.	150	90	70	80					50	39	230	140	109										
	Sampaloc.	3,121	2,525	1,114	5,264					5,403	4,983	8,385	7,928	6,097										
	Port Area.																							
	Intramuros.	510	516	494	380					290	199	890	806	693										
No. 3.	Ermita.	612	570	405	232					214	305	844	784	710										
	Malate.	450	373	333	316					324	202	766	697	535										
	Paco.	390	385	499	414					316	368	804	701	867										
	Pandacan.	524	434	316	28					319	290	847	753	606										
	Santa Ana.	839	213	114	919					299	110	1,758	512	224										
	Total.	16,716	14,219	11,501	35,17,949					16,764	14,641	35,34,665	30,983	26,142										

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

"V" in persons never vaccinated before; "R" revaccinations.

**CONSOLIDATED REPORT OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1928 <sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	1,073	160	298	615
Agusan.....	449	65	205	179
Albay.....	7,586	2,455	1,187	3,944
Antique.....	4,294	1,876	1,741	1,177
Bataan.....	2,181	872	337	972
Batanes.....				
Batangas.....	5,219	1,804	1,335	2,080
Bohol.....	5,794	1,942	1,388	2,464
Bukidnon.....	861	314	76	471
Bulacan.....	7,015	2,696	2,076	2,243
Cagayan.....	15,217	2,485	11,294	1,438
Camarines Norte.....				
Camarines Sur.....				
Capiz.....				
Catanduanes.....	1,240	254	358	628
Cavite.....	11,016	904	9,114	998
Cebu.....	13,603	4,373	1,986	7,244
Cotabato.....				
Davao.....	2,094	1,338	572	184
Ilocos Norte.....	22,522	1,901	16,056	4,565
Ilocos Sur.....				
Iloilo.....	17,676	4,363	10,798	2,515
Isabela.....	2,030	496	317	1,217
Laguna.....	21,361	2,496	17,079	1,786
Lanao.....	3,910	2,088	1,145	677
La Union.....	2,874	687	290	1,897
Leyte.....	15,289	3,655	9,406	2,228
Marinduque.....	431	187	117	127
Masbate.....	14,207	1,790	9,608	2,809
Mindoro.....				
Misamis.....				
Mountain Province.....	5,361	413	2,635	2,313
Nueva Ecija.....	4,575	1,807	569	2,199
Nueva Vizcaya.....	399	121	46	232
Occidental Negros.....	12,451	4,142	5,647	2,662
Oriental Negros.....				
Palawan.....	213	69	66	78
Pampanga.....	7,492	2,989	620	3,883
Pangasinan.....	5,525	1,892	731	2,902
Rizal.....	5,786	2,010	2,223	1,553
Romblon.....				
Samar.....	7,547	1,518	1,942	4,087
Sorsogon.....				
Sulu.....	1,581	734	100	747
Surigao.....				
Tarlac.....	5,354	1,528	2,850	976
Tayabas.....	3,779	1,868	667	1,244
Zambales.....	945	277	260	408
Zamboanga.....	1,583	857	180	546
Total.....	240,533	58,926	115,319	66,288

<sup>1</sup> Incomplete; reports from other provinces not yet received. Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF ANTI-SMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1928 —Continued**

Provinces	Inspections of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive
Abra.....	107	44	188	215	139	255	434	514
Agusan.....	18	29	49	141	201	99	268	269
Albay.....	1,300	516	1,037	389	869	652	3,206	1,557
Antique.....	488	148	502	267	493	506	1,483	921
Bataan.....	567	84	608	239	303	106	1,478	429
Batanes.....								
Batangas.....	853	179	1,249	506	792	760	2,894	1,445
Bohol.....	789	258	945	452	1,548	1,274	3,282	1,984
Bukidnon.....	34	30	75	86	181	255	290	371
Bulacan.....	1,827	289	1,535	588	1,108	855	4,470	1,732
Cagayan.....	693	64	761	222	1,724	2,776	3,178	3,062
Camarines Norte.....								
Camarines Sur.....								
Capiz.....								
Catanduanes.....	140	82	182	84	143	133	465	299
Cavite.....	603	90	895	481	3,353	3,876	4,851	4,447
Cebu.....	1,510	570	1,560	692	1,729	1,821	4,799	3,083
Cotabato.....								
Davao.....	53	25	181	69	725	427	959	521
Ilocos Norte.....	1,172	509	3,203	1,336	9,623	7,724	13,998	9,569
Ilocos Sur.....								
Iloilo.....	1,172	248	2,335	816	4,480	6,078	7,987	7,142
Isabela.....	280	97	280	117	580	385	1,140	599
Laguna.....	624	218	1,167	769	3,935	6,624	5,726	7,611
Lanao.....	58	35	258	162	789	789	1,105	986
La Union.....	399	184	490	465	355	604	1,244	1,253
Leyte.....	307	9	2,610	297	6,592	3,102	9,509	3,408
Marinduque.....	110	31	16	2	18	7	144	40
Masbate.....	316	60	1,125	254	4,571	2,410	6,012	2,724
Mindoro.....								
Misamis.....								
Mountain Province.....	55	19	247	160	578	1,031	880	1,210
Nueva Ecija.....	707	161	1,163	408	873	681	2,743	1,250
Nueva Vizcaya.....	90	29	33	32	90	109	213	170
Occidental Negros.....	1,005	207	2,108	544	2,979	3,598	6,092	4,349
Oriental Negros.....								
Palawan.....	1	1	3	2	159	18	163	21
Pampanga.....	792	353	688	347	214	412	1,694	1,112
Pangasinan.....	1,092	158	1,230	292	1,136	861	3,458	1,311
Rizal.....	1,116	449	397	315	489	848	2,002	1,612
Romblon.....								
Samar.....	354	177	723	463	1,391	1,215	2,468	1,855
Sorsogon.....								
Sulu.....	31	45	181	129	270	269	482	443
Surigao.....								
Tarlac.....	416	205	850	589	620	1,054	1,886	1,848
Tayabas.....	787	228	907	306	711	414	2,405	948
Zambales.....	90	47	159	108	141	215	390	370
Zamboanga.....	82	83	160	214	242	411	484	708
Total.....	20,038	5,961	30,100	12,558	54,144	52,654	104,282	71,173

<sup>1</sup> Incomplete; reports from other provinces not yet received. Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-DYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Laguna.....	217	132		349
La Union.....	60	31		91
Pampanga.....	259	43		302
Tarlac.....	38	12		50
Total.....	574	218		792

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-CHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Batangas.....	142			142
Iloilo.....	42			42
Laguna.....	95	49		144
Pangasinan.....	166	132		298
Rizal.....	7,748	2,797		10,545
Tarlac.....	454			454
Total.....	8,647	2,978		11,625

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-TYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Iloilo.....		120		120
Laguna.....	1,516	1,094	646	3,256
Pangasinan.....	153	99	38	290
Rizal.....	152	70	26	248
Tarlac.....	734	126		860
Total.....	2,555	1,509	710	4,774

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928:**

Provinces	First injections	Second injections	Third injections	Total
Bataan.....	1,321	902		2,223
Batangas.....	39	24		63
Bohol.....	394	387		781
Iloilo.....	3,570	1,570		5,140
Laguna.....	250	201		451
Lanao.....	1,226	273		1,499
La Union.....	2,163	1,028		3,191
Marinduque.....	693	105		798
Nueva Ecija.....	387	350		737
Nueva Vizcaya.....	45	45		90
Occidental Negros.....	1,981	1,006		2,987
Pampanga.....	24,171	1,283		25,454
Pangasinan.....	904	763		1,667
Rizal.....	425	399		824
Tarlac.....	1,481	867		2,348
Zamboanga.....	608	78		686
Total.....	39,658	9,281		48,939

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF FEBRUARY, 1928**

No case and no death reported during the month.

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF FEBRUARY, 1928.**

No case and no death reported during the month.

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF FEBRUARY, 1928**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, February 1, 1928:</b>				
Minor .....	118	101	75	294
Sewer .....	26	52	.....	78
Vacating .....	8	11	.....	19
Filling .....	24	36	21	81
<b>Total .....</b>	<b>176</b>	<b>200</b>	<b>96</b>	<b>472</b>
<b>Orders issued during the month:</b>				
Minor .....	9	4	8	21
Sewer .....	.....	1	4	5
Vacating .....	.....	.....	.....	.....
Filling .....	.....	.....	.....	.....
<b>Total .....</b>	<b>9</b>	<b>5</b>	<b>12</b>	<b>26</b>
<b>Orders completed during the month:</b>				
Minor .....	6	13	8	27
Sewer .....	1	2	.....	3
Vacating .....	.....	1	.....	1
Filling .....	.....	.....	.....	.....
<b>Total .....</b>	<b>7</b>	<b>16</b>	<b>8</b>	<b>31</b>
<b>Orders cancelled during the month:</b>				
Minor .....	.....	.....	.....	.....
Sewer .....	.....	.....	.....	.....
Vacating .....	.....	.....	.....	.....
Filling .....	.....	.....	.....	.....
<b>Total .....</b>	.....	.....	.....	.....
<b>Orders pending, February 29, 1928:</b>				
Minor .....	121	92	75	288
Sewer .....	25	51	4	80
Vacating .....	8	10	.....	18
Filling .....	24	36	21	81
<b>Total .....</b>	<b>178</b>	<b>189</b>	<b>100</b>	<b>467</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations .....	32	54	53	139
<b>Permits for minor building constructions:</b>				
Approved .....	45	58	38	141
Disapproved .....	11	8	.....	19
<b>New buildings completed .....</b>	<b>10</b>	<b>26</b>	<b>14</b>	<b>50</b>
<b>Permits for light and mixed material constructions:</b>				
Approved .....	5	40	31	76
Disapproved .....	10	5	1	16
<b>Prosecutions:</b>				
Convictions .....	.....	1	.....	1
Dismissals .....	1	1	.....	2
Amount of fines .....	.....	P6.00	.....	P6.00
<b>Plumbing permits issued .....</b>	<b>49</b>	<b>77</b>	<b>61</b>	<b>187</b>
<b>Plumbing projects completed .....</b>	<b>38</b>	<b>37</b>	<b>30</b>	<b>105</b>
<b>Premises connected to the sanitary sewer to January 31, 1928 ..</b>	<b>2,542</b>	<b>4,364</b>	<b>758</b>	<b>7,664</b>
<b>Connected during the month .....</b>	<b>4</b>	<b>3</b>	<b>5</b>	<b>12</b>
<b>Total .....</b>	<b>2,546</b>	<b>4,367</b>	<b>763</b>	<b>7,676</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

MARCH, 1928

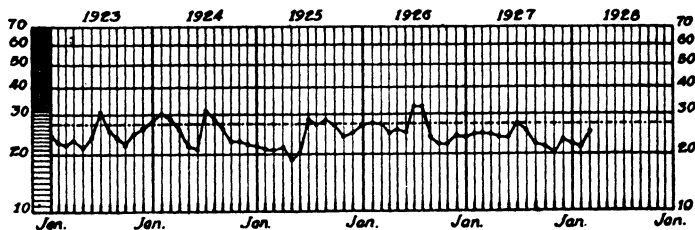
No. 3

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germes, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY OF MANILA*



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., Chairman  
LEONCIO LOPEZ-RIZAL, M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
A Cholera Epidemic Traced to Water, by Dr. Manuel Ma. Aycardo..	123
Plasmochin and Quinine on the Prophylaxis and on the Prevention of Relapse of Malaria, by Dr. Antonio Ejercito.....	128
Questions and Answers on Smallpox.....	135
Miscellaneous .....	146
General Statistics .....	149

122

Service

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**MARCH, 1928**

**No. 3**

**A CHOLERA EPIDEMIC TRACED TO WATER <sup>1</sup>**

**By Dr. MANUEL MA. AYCARDO**

*District Inspector, Philippine Health Service*

During the month of December, 1925, I was ordered by the Director of Health to proceed to the Province of Romblon and take charge of the control and eradication of a cholera epidemic then developing in that province in a more or less alarming manner. Upon arrival thereat on December 14th, I established immediately preventive and suppressive measures and conducted investigations with a view to locating the source of the epidemic.

**THE TOWN PROPER**

Romblon is a sea-port town located on a foot of a hill, with a surface area of scarcely a kilometer square and an estimated population of 4,000 (last census). A great majority of dwelling houses are of light materials, closely built together and not provided with toilet facilities. Garbage disposal was fairly satisfactory and fly nuisance practically nil. The food supply differs nothing with those of other localities; the water supply until then was from a good spring. The town has had a reputation since this spring was used to have had very low the incidence of water-borne diseases.

**FIRST-CASES REPORTED**

The first two cases reported during 1925 were two children from a family of eight members coming from Fort McKinley

---

<sup>1</sup> Read before the Health Officers' Assembly, Baguio, Mountain Province, on May 6, 1926.

(Rizal Province) on board the steamship *Carmen*. Upon landing at Romblon on November 11th, one of them was discovered with symptoms of cholera, developed on board, and died three hours after. In another child, cholera developed after two days, followed by recovery. The rest of the family were found apparently in good health but two among them were confirmed "carriers" and were released from strict quarantine only after a repeated negative examination of the stools.

#### THE EPIDEMIC

Based on the official returns of this town, the epidemic broke out on December 9 and lasted until December 16, with a total of 33 cases and 23 deaths, as shown hereunder:

Date	Cases	Deaths
December 9.....	1	1
December 10.....	9	4
December 11.....	4	2
December 12.....	6	3
December 13.....	6	4
December 14.....	2	2
December 15.....	3	1
December 16.....	2	4
December 17.....	0	2
Total.....	33	23

The epidemic, as may be seen, broke out with special intensity on December 10 and ceased on December 17.

For obvious reasons, we were only able to collect the necessary data from 17 out of the 33 cases, which were tabulated as follows:

	Total cases	Percentage
Sex:		
Male.....	4	23.5
Female.....	13	76.5
Occupation:		
Housekeeper.....	8	47.0
Laborer.....	1	5.9
Student.....	3	17.7
Farmer.....	1	5.9
None.....	4	23.5
Residents.....	17	100.0
Age-groups:		
1-5 years.....	2	11.7
6-10 years.....	1	5.9
11-15 years.....	4	23.6
16-20 years.....	2	11.7
21-25 years.....	1	5.9
26-30 years.....	2	11.7
31 and over.....	5	29.5

As may be seen, the incidence among females, housekeepers, and those belonging to the age-group from 1 to 20 years is proportionately high.

The following shows the date of onset and the date of notification of the cases:

Case No.	Date of first symptoms	Date reported
1.....	December 5, 1925.....	December 10, 1925.
2.....	December 7, 1925.....	December 11, 1925.
3.....	December 8, 1925.....	December 10, 1925.
4.....	December 9, 1925.....	December 9, 1925.
5.....	December 10, 1925.....	December 10, 1925.
6.....	December 10, 1925.....	December 10, 1925.
7.....	December 10, 1925.....	December 12, 1925.
8.....	December 10, 1925.....	December 10, 1925.
9.....	December 11, 1925.....	December 11, 1925.
10.....	December 12, 1925.....	December 12, 1925.
11.....	December 12, 1925.....	December 12, 1925.
12.....	December 13, 1925.....	December 13, 1925.
13.....	December 14, 1925.....	December 14, 1925.
14.....	December 14, 1925.....	December 14, 1925.
15.....	December 15, 1925.....	December 15, 1925.
16.....	December 15, 1925.....	December 15, 1925.
17.....	December 15, 1925.....	December 15, 1925.

#### PROBABLE SOURCE

The staple food differs nothing with that of other localities and consists of rice, fish, meat, vegetables, and at times fermented native wine. Suspicion was directed to the so-called "kinilao" (pickled fish), a favorite dish among the Visayans. But the possibility of its being a source of infection was discarded. In fact, "kinilao" is also eaten in other localities where no cholera has been reported. The suspicion to certain fish species that at times become poisonous was also discarded, since this happens during the spawning season and that is during June, July, and August while the epidemic developed in December. All the cases failed to give history of having eaten shell-fish.

Despite the good quality of the water used for drinking and domestic purposes, a biological examination was made on December 19 with negative result.

As a matter of routine preventive measure, the detection of cholera carriers was established. As it was conducted during the epidemic, the percentage was evidently increased. Thus, of 1,150 persons examined, 145 or 12.7 per cent were positives. Among the positives, 65.5 per cent were non-agglutinable vibrio and 34.5 per cent agglutinable vibrio.

Confirmed carriers and those persons who have had with them intimate contact and association became the subject of our investigation. One of them was a man by the name of Hilarion Mayor. He was the Government caretaker of Romblon Water System and had a history of having eaten shell-fish some time prior to the epidemic. This shell-fish came from Manila (perhaps from Malabon and Navotas which were then infected towns). Moreover, he had been, according to him, a remote

contact of a non-cholera patient prior to the epidemic and vaccinated against cholera and typhoid.

On December 5, this Hilarion Mayor together with two municipal prisoners (Jose Doroteo, Engracio Mortel), thru previous order, made a general cleaning of the water reservoir. The cleaning consisted in the brushing of its inner walls and floor. It took them two hours to complete the cleaning. During the investigation, the two prisoners were already released and their whereabouts could not be ascertained.

The cemented water reservoir is located at the foot of a hill away from dwelling houses, roofed with galvanized iron, and all open spaces wire-screened. The water from a small spring 10 feet away flows into this reservoir, and thru a main pipe the whole town is supplied with water for drinking and other domestic purposes.

This reservoir was disinfected with potassium permanganate on December 11, under the personal supervision of the district health officer. The public was advised beforehand that they should keep a good supply until the reservoir was again put in working order.

The date on which we found the first cases of the epidemic corresponds, giving allowance to the incubation period, with that of the general cleaning of the reservoir; the latter on December 5, 1926, and the former on December 9, 1926. These cases, particularly those registered during December 10th, were found in different blocks but always within the areas supplied by the reservoir.

The infection continued even after disinfection and is only explained by no other than the use of contaminated water kept before this sanitary measure. On the other hand, contact infection cannot at all be discarded.

#### CONCLUSIONS

1. Two probable sources should be considered in connection with this epidemic: (a) Either Hilarion Mayor acquired the organism thru the ingestion of shell-fish from infected localities (Malabon and Navotas, Rizal), and as such, contaminated the water reservoir on December 5. (b) Or, the two cases from Fort McKinley (Rizal) propagated the infection thru contact, directly or otherwise.

2. Contact infection was the main factor in the spread of the disease.

Special credit is due to Dr. Leoncio Lopez-Rizal, Philippine Health Service epidemiologist, for his valuable suggestions especially on the use of his statistical data; and to Dr. Pio La-uengco, district health officer of Romblon Province for his efforts and persistence displayed in conducting with the writer these investigations.

## **PLASMOCHIN AND QUININE ON THE PROPHYLAXIS AND ON THE PREVENTION OF RELAPSE OF MALARIA**

By Dr. ANTONIO EJERCITO

*Senior Surgeon, Philippine Health Service*

The discovery of plasmochin, a new specific antimalarial remedy, was first formally brought out at the meeting of the Association of German Scientists and Physicians on September 22, 1926, in Duesseldorf, Germany. From that time on, it has been experimented in other countries by renown workers who arrived at a common conclusion that it is an effective remedy in the treatment of malaria.

According to Horlein, plasmochin is tasteless, yellowish, granular powder, slightly soluble in alcohol and in water to the amount of 0.03 per cent and readily convertible into its chloride salt by the hydrochloric acid of the gastric juice. It is a derivative of chinolin nucleus and chemically known as alkyl-amino-methoxy-quinolin.

Plasmochin is presented locally into two forms, namely: the pure plasmochin which is manufactured in tablets each containing 0.02 gram of the drug; and the plasmochin compound which is likewise manufactured in tablets each containing 0.01 gram of plasmochin and 0.125 gram of quinine sulphate.

In this little work, we made use of plasmochin compound which was furnished to us by Dr. C. M. Hasselmann to whom we are greatly indebted. We are rather fortunate to have and utilize this form as this seems to be better recommended by scientific workers. Muhlen says that while in tertian and quartan infections plasmochin alone acts as well as quinine, in aëstivo-autumnal malaria combination of both drugs is commendable, as quinine seems to have a better effect on the schizonts and plasmochin destroys the gamete forms (crescents) and prevents their formation. Nutter reports that plasmochin will not supplant quinine in the Tropics but it may prove a valuable adjuvant when used with that drug.

Quinine as drug needs no introduction as it is a well-known antimalarial remedy even to the laity.

Relying upon the efficacy of plasmochin compound in the treatment of malaria as brought out from considerable field



of experimentation, we had therefore the desire to find out in this little work, if it has any value as a prophylactic, and if so, how is it as compared with that of quinine: and furthermore, whether it is effective in "blood sterilization" of malaria carriers and if so, how is it as compared with quinine.

#### PROCEDURE AND TECHNIC

In order that plasmochin compound and quinine might be given fair and justifiable tests, we therefore considered only those people living under one roof or practically living under the same conditions in a particular locality, to avoid the possibility that someone might be more predisposed to malarial infection than the other. In other words, we selected a group of people, upon which to base our experiments, that were equally predisposed to malarial infection. With this end in view, we therefore took into account the big group of people living in the big barrack (camarin) at Camp Haley, Novaliches Water Project.

There were thirty-two adult people, seven of whom were females, that we gathered and kindly requested to submit to the experimentation. In order to spot out among these people before administering the antimalarial remedies, those that were and were not harboring malarial parasites in the blood, three blood films at about weekly intervals were gotten from them and examined. As a result, there were found 17 negatives and 15 positives of malaria. The seventeen negatives were subdivided into two groups: one group comprising nine and the other eight negatives. To facilitate reference we identify the former as "Plasmochin Compound Prophylaxis Group" for this was to undergo the eight week-period of plasmochin compound administration for prophylaxis; and we termed the latter as "Quinine Prophylaxis Group" for this, unlike the former, was to be treated with quinine as prophylactic for a period of eight weeks. As regards the 15 positives, like what we have done with negatives, we subdivided them into a group of eight and identified as "Plasmochin Compound Sterilization Group" and a group of seven known as "Quinine Sterilization Group."

In the "Plasmochin Compound Prophylaxis Group" there were eight males and one female; while in the "Quinine Prophylaxis Group" there were six males and two females. In the "Plasmochin Compound Sterilization Group" there were four males and four females while in the "Quinine Sterilization Group" there was no female but only seven males.

We gave plasmochin compound, for prophylaxis and sterilization, in a dose of one tablet per mouth to each subject every evening. It might not be amiss to mention that the dosage of the plasmochin compound was so fixed to one tablet per take following the advice of Dr. C. M. Hasselmann in his letter to the writer dated October 12, 1927, that it is doubtful if more than one tablet of plasmochin compound daily for prophylaxis would be of better use. As regards the dosage for quinine sulphate, we followed the instructions of P. H. S. Circular No. 136 to give per month two 5-grain tablets to each subject every evening.

At the end of every week treatment with plasmochin compounds and quinine sulphate, we got blood films (thick and thin films) on slides, from all subjects for laboratory examinations. The purpose of this was for us to detect at weekly intervals who of the subjects would succumb to malaria inspite of the varied prophylactic treatments; and who of those malaria carriers would show blood, negative of parasites, under varied sterilization treatments.

The period of observations was set to last for eight weeks. During this period the subjects under treatment were carefully attended and observed as much as possible, so that any abnormal manifestations or complaints might be particularly noted. It is, however, noteworthy to mention that since the subjects were healthy and ambulatory malaria carriers, they were not therefore strictly confined in any particular place but up and about at large. And this was the cause of the reduction of subjects in the latter part of the experimentation as some of them left the place. Thus, while we began with initial number of 32 subjects, we ended with 27 subjects, showing that six subjects dropped out during the course of observations.

#### OBSERVATIONS

Coincident with the number of weeks during which the subjects were put to test, observations were set by week to wit: as first week of observations so on up to the eighth weeks of observations.

In the course of our observations, our attention was first struck in the manner the subjects were taking the two kinds of drugs; the subjects better tolerated and admired more taking plasmochin compound than they do the quinine sulphate. In all probability, this was due to the fact that the latter drug

is much more bitter and more bulky to take (considering the required dosages) than the former.

In the "Plasmochin Compound Prophylaxis Group," there were two subjects that turned out positive of benign tertian infection. These showed positive blood only on the fifth and sixth week respectively from the time they began taking plasmochin compound for prophylaxis and never thereafter; and while one complained of chills just prior to the time when the positive blood film was gotten, the other had fever lasting for about 24 hours, 12 days before the blood film that resulted positive was obtained. The rest of the subjects, numbering six, maintained negative blood films throughout the period of observations; although it might be remarked that one subject who could not be located in the first week of observations; and two subjects (one could not be found and the other refused to submit to blood-film taking) in the seventh week of observations, failed to have their blood examined for malarial parasites. Basing upon the foregoing available data, it could be stated that 25 per cent of those taking plasmochin compound for prophylaxis succumbed to malaria infection altho they apparently recovered from it, so that at the end of the eight-week period of observations all of the subjects were negative of malaria infections.

Out of the eight subjects in the "Quinine Prophylaxis Group," there were six that later in the course of observations were found to have acquired malaria infection as verified by the series of blood film examinations. The *first subject* was found positive of benign tertian infection in the second week, positive of malignant tertian in the fifth and sixth week, and positive again of benign tertian in the seventh and eighth week of observations. He was febrile for a day in the eighth week of observation. The *second subject* was found positive of benign tertian infection on the fourth week of observations, but later on was negative until the last of the eighth week of observations. It might be remarked that the subject had chill and fever in the fourth week, and failed to appear for blood test in the seventh week. The *third subject* was found positive of mixed benign and malignant tertian infection in the fifth week and still showed benign tertian in the sixth week, but was apparently negative in the eighth week of observations. It might be remarked that he had chill and fever lasting for a day in the seventh week, and he failed to appear for blood tests in the second and seventh week of observations. The *fourth*

and *fifth* subjects were both found positive of benign tertian infection in the fifth week of observation and continued to be so only up to the succeeding week. The fifth subject had fever lasting only for a day in the eighth week of observations. The *sixth subject* was found positive of benign tertian infection only in the eighth or last week of observations. This and the first subject are the ones that were positives of malaria even in the eighth or last week of observations. From the foregoing discussion it could be stated that 75 per cent of those taking quinine sulphate for prophylaxis yielded to malaria infection; and 33½ per cent of those infected were still noted to be so even in the eighth or last week of observations.

In the "Plasmochin Sterilization Group," among the eight positive malaria carriers, there was observed a weekly gradual improvement in the sense that almost every week, based upon blood film examinations, there was noted up to the fourth week of observations increasing number of subjects negative of malarial parasites. While in the fourth, fifth, and sixth there was slight variation in the appearance of positive carriers, in the last seventh and eighth week of observations there was none found still positive of malarial parasites. In the course of eight weeks of observations, there were two subjects that manifested symptoms of malaria; one had but once in the fifth week of observations, while the other had two occurring in the second and sixth week of observations.

It might not be amiss to mention in this connection that one of the carriers treated was a woman of three months' pregnancy who was purposely not put under quinine but under plasmochin compound. And this case turned out negative in the first week of treatment and kept on to be so until the eighth week or the end of the test, without manifesting any untoward effect.

In the "Quinine Sterilization Group" out of seven subjects that originally started with the test, three only remained and withstood the requirements of the said test until its end, while four either refused to continue with the test or left the place early in the course of the treatment. During the eighth-week period of observations, although some improvements were noted in the fifth and sixth week when two and later all subjects showed negative blood films, one subject was found still positive of malaria in the eighth or last week of observations.

It may be stated in general that there was no accident or ill-manifestation among the subjects, that might be attributed to

the administration of either plasmochin compound or quinine sulphate.

The details of the foregoing observations are tabulated and presented as follows:

TABLE I.—*Showing the subjects who had a series of three negative blood films at weekly intervals and treated with plasmochin compound for prophylaxis.*

Sub- jects	Observations								Remarks
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	
1	(a)	(a)	(a)	(a)	(a)	(c)	(a)	(a)	Fever in the third week.
2	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	
3	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	
4	(c)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	Chill and fever in the sixth week. Fever in the fourth week.
5	(a)	(a)	(a)	(a)	(a)	(d)	(a)	(a)	
6	(a)	(a)	(a)	(a)	(d)	(a)	(a)	(a)	
7	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	
8	(a)	(a)	(a)	(a)	(c)	(a)	(b)	(a)	

<sup>a</sup> Negative.  
<sup>b</sup> Refused.

<sup>c</sup> Not found.  
<sup>d</sup> Benign Tertian Malaria.

TABLE II.—*Showing the subjects who had a series of three negative films at weekly intervals and treated with quinine sulphate for prophylaxis.*

Sub- jects	Observations								Remarks
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	
1	(a)	(d)	(a)	(a)	(c)	(a)	(d)	(d)	Fever in the eighth week. Chills and fever in the fourth week. Chills and fever in the seventh week.
2	(a)	(a)	(a)	(d)	(a)	(a)	(b)	(a)	
3	(a)	(b)	(a)	(a)	(d a)	(d)	(b)	(a)	
4	(a)	(a)	(a)	(c)	(d)	(d)	(a)	(a)	Fever in the eighth week.
5	(a)	(b)	(a)	(a)	(d)	(d)	(a)	(a)	
6	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(d)	
7	(a)	(b)	(a)	(a)	(a)	(a)	(a)	(a)	
8	(a)	(a)	(a)	(b)	(b)	(a)	(a)	(a)	

<sup>a</sup> Negative.  
<sup>b</sup> Not found.  
<sup>c</sup> Refused.

<sup>d</sup> Benign Tertian Malaria.  
<sup>e</sup> Malignant Tertian (crescent form) malaria.

TABLE III.—*Showing the cases who had a series of three blood film examination at weekly intervals and found to be positive of malaria, were treated with plasmochin for blood sterilization.*

Sub- jects	Observations								Remarks
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	
1	(a)	(d)	(a)	(a)	(d)	(d)	(a)	(a)	Fever in the fifth week.
2	(c)	(a)	(a)	(c)	(a)	(a)	(a)	(a)	
3	(d)	(a)	(d)	(c)	(a)	(a)	(a)	(a)	
4	(d)	(a)	(a)	(d)	(a)	(d)	(a)	(a)	
5	(a)	(d)	(a)	(a)	(a)	(d)	(a)	(a)	
6	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	Chills and fever in the second and sixth week.
7	(c)	(a)	(a)	(c)	(a)	(a)	(b)	(b)	
8	(d)	(d)	(d)	(a)	(d)	(d)	(a)	(a)	

<sup>a</sup> Negative.  
<sup>b</sup> Refused.  
<sup>c</sup> Not found.

<sup>d</sup> Benign Tertian Malaria.  
<sup>e</sup> Malignant Tertian (crescent form) malaria.

**TABLE IV.**—*Showing the cases who had a series of three blood film examination at weekly intervals and found to be positive of malaria, were treated with quinine for blood sterilization.*

Sub- jects	Observations								Remarks
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	
1	(d)	(d)	(d)	(o)	(s)	(s)	(o)	(o)	Chills and fevers in the second and sixth week.
2	(d s)	(d)	(d)	(s)	(s)	(s)	(s)	(s)	Fever in the second week.
3	(s)	(d)	(s)	(o)	(o)	(s)	(o)	(o)	Chills and fever in the first week.

<sup>a</sup> Negative.

<sup>b</sup> Refused.

<sup>c</sup> Not found.

<sup>d</sup> Benign Tertian Malaria.

<sup>e</sup> Malignant Tertian (crenate form) malaria.

### SUMMARY

From the foregoing observations the following points come out salient:

Plamochin compound is apparently efficacious when used as a prophylactic remedy against malaria and maintains more subjects negative of malaria than quinine throughout the period of experimentation.

Altho the data for the test of quinine in the treatment of carriers to prevent relapses are incomplete when compared with those of plasmochin compound, due to dropping out of subjects, yet every indication seems to point out that the latter drug compares favorably with the former in such kind of treatment.

Plasmochin compound is better tolerated by the subjects than quinine.

Plasmochin compound has no untoward or ill-effect in a case of pregnancy.

In connection with the administrations of plasmochin compound and quinine sulphate in the dosages prescribed, there was not noted any untoward or ill-effect among the subjects.

## QUESTIONS AND ANSWERS ON LEPROSY

### 1. What is leprosy?

Leprosy is a chronic infectious disease caused by a specific germ vulgarly known as "Leprosy Bacillus" (*Mycobacterium lepræ*), and characterized by lesions involving chiefly the skin and the nerves.

### 2. Is leprosy contagious?

There is no room to doubt the contagiousness of leprosy; we have overwhelming evidence on hand proving its contagious nature. The contention that it is not as contagious as other diseases, such as syphilis, tuberculosis, etc., is probably true in the average case but in susceptible individuals, casual contact with a leper in active stages of the disease, may be sufficient to determine an infection.

### 3. What is meant by "a leper in the active stages of the disease"?

A leper in the active stages of the disease is a patient with active progressive lesions of leprosy, discharging myriads of germs from his ulcers as well as in his sweat, nasal secretion, saliva, urine, sex secretion, etc. Such an individual is naturally a constant source of menace to the health of the community, and under our laws, is subject to segregation in leper hospitals or at Culion.

### 4. How may a healthy person contract leprosy?

There are two principal factors concerned in the transmission of leprosy: (1) the presence of predisposing factors in the individual exposed and (2) the infectiveness of the leper.

The predisposing factors are:

(a) Age—A child is much more likely to be infected than adult.

(b) Debilitating illnesses, such as syphilis, malaria, hook-worm, etc.

(c) Unsanitary habits and surroundings.

(d) Faulty diet, such as eating of stale or partly decomposing fish, meat, and vegetables.

A prolonged and intimate contact, such as living in the same house, sleeping on the same bed, using the same clothes and towels, eating on the same utensils, with a leper discharging the germs in his bodily excretions and secretions as well as ulcers, if any, is the usual method by which the disease is acquired. Infection may also take place by indirect contact thru some intermediate object or carrier. In any case, a small cut or abrasion of the skin seems necessary to allow passages of the germs into the body; infection through the respiratory and digestive tracts are rather remote possibilities.

**5. Is leprosy hereditary?**

This disease can not be inherited, although it is claimed by some authorities that a predisposition to it may be transmitted from parent to offspring. In the well-known cases of families heavily infected with leprosy, the possibility of transmission by direct or indirect contact can not usually be eliminated.

**6. How may the children of lepers be prevented from contracting the disease?**

If the children of lepers are separated from their parents immediately after birth, and prevented from coming in contact with lepers, thereafter, none of them will develop leprosy. If removed before the age of 6 months, a small percentage will develop the disease, whereas from the sixth month on, a considerable proportion will become leprous. If separation is delayed to the 15th year, one-half will be found to become leprous.

Therefore, the safest means of protecting the children of lepers or any other child is to prevent them from coming into contact with the disease, i. e., their leper parents, immediately after birth. If separation is delayed after 6 months, an observation period of at least 5 years is necessary before the child can be declared non-leprous.

**7. At what age are people most apt to be infected?**

Leprosy may develop at any age. However, children and young adults are more likely to contract the disease than older individuals.

**8. How long does it take the disease to develop after infection takes place?**

It may be as short as a few weeks, or it may take 10 or more years, depending on the bodily resistance of the individual and the vigor of the germs. The average is about 5 years.

**9. What is meant by latent infection in connection with leprosy?**



In most of the individuals infected with leprosy, the germs lie for a long time in a quiescent state after having gained a foothold in the body. In these cases, the germs are usually found in the nerves and lymphatic vessels being very rare in the skin itself. Such a condition is known as latent infection. It is often possible for an expert to diagnose these cases clinically and are then called "incipient lepers." It is this prolonged latent period which takes the disease so long to develop to a stage recognizable to the ordinary doctor.

### SYMPTOMALOGY AND DIAGNOSIS

#### 10. What are the principal or cardinal symptoms of leprosy?

The most characteristic symptoms of leprosy are the lesions on the skin and the anesthesia or loss of cutaneous sensibility.

The skin manifestation may consist of (1) macules or patches of pink or whitish color, (2) infiltrations or thickenings of the skin having a pinkish or bronzed color, and (3) nodules. When the patient suffers from an acute reaction known as *alibagha* in Visayan, acute papular eruptions may be seen. In some beginning cases lesions resembling those of measles have been observed. The anesthesia or loss of cutaneous sensibility may occur on a cutaneous lesion or even on an apparently normal skin. This symptom is due to involvement of the nerves. In advanced cases, there is paralysis of some of the muscles of the extremities and face, producing contraction of the fingers and toes, and inability to close the eyes and the mouth.

#### 11. What are the secondary or less important signs and symptoms of leprosy?

They are (1) numbness of the extremities, (2) thickening of the superficial nerves and enlargement of the lymphatic glands, (3) loss of sweat in the affected part, (4) falling of the eyebrows and beard, (5) dry, cracked skin on the shins, (6) "claw" hand, (7) loss of fingers, (8) long standing ulcers at the soles of the feet.

#### 12. Which of the above symptoms are first to appear?

There is no fixed rule. In 50 per cent of the cases, the first symptom felt by the patient is numbness, pain, or crawling or prickling sensation felt in one or more extremity. The most common early visible sign is a macule or patch, either pinkish in color or just paler than the surrounding skin. The most common sites of these lesions are the buttocks, the face, thigh,

and arm. These early lesions of leprosy are often confused with *Tinea Flava* (pañó blanco, An-an or Ap-ap). In a few cases the first thing noticed by the patient is that a portion of his skin can not feel pain or heat when it is pricked with a pin or burned with a cigarette. The affected skin may show no discoloration or change from the normal.

### 13. How is leprosy classified?

The classical types of leprosy are (1) the nodular or tubercular, (2) the nerve or neural, and (3) the mixed.

The *nodular type* is distinguished by the prominent lesions on the skin consisting of reddish; bronzed, or yellowish elevations, which may be present at any part of the body but are more frequently seen at the ears, face, and extremities. The lesions contain numerous leprosy germs and, if they ulcerate, myriads of them are discharged hence a patient with this type of leprosy is a source of great danger to the community."

The *neural type*, on the other hand, show slight or no skin eruptions, the lesions being confined to the nerves. These cases are distinguished by the "claw hand," bending of the fingers, paralysis of the muscles of the face, and chronic ulcers at the soles of the feet. This kind of ulcers is not dangerous because they do not discharge bacilli; the germs are high up in the nerves. These neural cases are, therefore, much less dangerous than the cutaneous type.

The *mixed type* shows skin and nerve lesions at the same time. They are dangerous in proportion to the amount of skin lesions present.

### 14. Is a microscopic examination necessary to diagnose leprosy?

Yes, a microscopic examination is necessary to arrive at a definite diagnosis of leprosy. We now know however, that in many cases of leprosy, such as in the incipient stages and in neural type, the ordinary microscopic examination usually gives a negative result, so that in order to start the treatment, it is not necessary to wait for a positive bacteriological finding. To safeguard the patient, our laws expressly state that nobody can be permanently segregated unless the bacteriological examination is positive. If a case clinically is undoubtedly leprosy, the patient may be detained temporarily inspite of a bacteriologically negative examination. In such cases, however, the patient is not mixed with positive lepers.

**15. What is meant by "suspects"?**

Suspects are persons believed to have leprosy, and are, therefore, subject to a diagnostic examination by a competent physician or group of physicians.

**16. What is meant by "contacts"?**

Non-leprous contacts are individuals who have lived or otherwise have come in contact with positive lepers for relatively long periods of time but who show no evidences of the disease. These persons should receive antileprotic treatment to prevent the development of the disease in them.

**17. What is meant by "incipient lepers"?**

Incipient lepers are patients showing undoubted early lesions and symptoms of leprosy, but who have been found constantly negative on repeated bacteriological examinations.

**18. What is meant by "negatives"?**

Negatives are persons who have previously been positive lepers but who subsequently have repeatedly been found bacteriologically negative, and show no active clinical manifestations of the disease.

**19. What is meant by "negatives under parole"?**

Negatives under parole are negatives who have been conditionally released and allowed to return to their homes, but who are required to receive treatment regularly until they have finished the two years' negative period required by the regulation of the Philippine Health Service.

**20. What is meant by "discharge negatives"?**

Discharged negatives are negatives who have completed without interruption the required 2-year period of observation and treatment. They are advised, though not required, to continue receiving the treatment after their discharge.

**21. Are these negatives not dangerous to others in the community?**

Negatives are not dangerous so long as they comply with the regulations of the Philippine Health Service.

**22. When a patient becomes negative, can he go home?**

After three consecutive negative examinations covering a period of six months, the patient may be allowed to leave the leper hospital, provided he lives near a hospital or dispensary wherein he can be treated with anti-leprotic drugs. If he lives so far away that he can not receive the treatment regularly, he is not allowed to go home until he has completed the full two years' negative period.

### PROPHYLAXIS

**23. Is leprosy still common in the Philippines? How is it distributed?**

Yes, leprosy is still common in many provinces of the Philippines. However, in a few provinces, it is practically non-existent. The most heavily infected provinces are Cebu, Bohol, Iloilo, Albay, Sorsogon, Ilocos Sur, Camarines Sur, and Zambales. During the last 20 years, the incidence has been much diminished but it seems to have become stationary in most of the infected provinces during the last few years. Unless a systematic campaign is made to eradicate and control leprosy, the disease will most probably spread throughout the Islands.

There is no means of determining the exact number of lepers still at large, but it is estimated that there are still from 4,000 to 10,000 positive and incipient lepers not in segregation. "This number is small."

**24. How can leprosy be eradicated from the Philippines?**

1. By the hospitalization of all positive lepers.
2. Treatment of incipient lepers and negatives in outdoor dispensaries or skin clinics.
3. Eradication of such diseases as hookworm, malaria, syphilis, skin diseases, etc., which weaken the bodily resistance and predispose to leprosy.
4. Education of the people regarding leprosy in particular and health matters in general.

**25. How may the public help in eradicating leprosy?**

1. By observing cleanly and healthy personal habits.
2. By getting rid of and not tolerating such diseases as malaria, hookworm, syphilis, skin diseases.
3. By presenting themselves immediately to the health officials as soon as they suspect themselves of having the early symptoms of leprosy.
4. By convincing positive cases to present themselves to the health authorities for hospitalization.
5. By reporting positive cases who refuse to present themselves, to the health authorities or to the police.

**26. What should a person do to avoid leprosy?**

He should avoid associating with positive lepers. (As already been described, incipient lepers and negatives are not dangerous.) He should eat only fresh food, avoiding state meat, fish, and vegetables. He should eat enough protein foods daily.

He should be clearly in his habits, bathing at least once a day. He should take some sort of exercise regularly; walking is one of the best. He should walk at least 10 miles a day.

27. If a person is suspected of having leprosy, what should he do?

He should at once go to a competent physician, preferably an officer of the Philippine Health Service, whose services in the public dispensaries could be secured **FREE AND WITHOUT CHARGE**, in order that the proper diagnosis of the disease may be established. In case that it is some other kind of sickness, nothing is lost, but if it happens to be **LEPROSY**, early treatment can be instituted and the result will be more favorable and satisfactory. Moreover, there is an early period in leprosy at the very beginning of the sickness, in which certain signs are suspicious to be leprosy but not sufficiently evident for a conclusive clinical diagnosis of leprosy; in this stage the patient so having such signs will become sooner or later a leper if not properly treated; and treatment could be procured in the public dispensary free of charge, without the necessity of being segregated in the leper detention camp, or, in other words, without changing his normal life.

28. If a person is found to be a positive leper, what is to be done to him?

He should present himself to the nearest health office for examination. If found positive, he will be segregated in a hospital. It is intended that patients segregated in the provinces will be kept in so-called "regional treatment stations" for a period of about two years. If they show improvement, they will be kept there. But if they fail to improve and are found to be more or less incurable, they will be sent to Culion where they are more free to move about and so as not to discourage the other patients in the treatment station. Patients who break regulations in the treatment stations may also be sent to Culion.

29. Why can not a positive leper be segregated in his home?

This step is not being contemplated at the present time because it is next to impossible to properly segregate positive lepers in their own homes. It should be borne in mind that a positive leper discharges myriads of germs—in his sweat, tears, saliva, sexual secretions, urine, feces, in other words, in all his bodily excretions and secretions. Therefore a positive leper contaminates everything he touches—his utensils, clothing, etc. (Our homes not adequate for home segregation and our temperament, too, renders such a measure ineffective.)

30. Why are lepers segregated, and other persons suffering from such diseases as syphilis, tuberculosis, etc., are not?

(1) It is possible to stamp leprosy; impossible to stamp out tuberculosis and syphilis. In England, Germany and France, leprosy was common in the Middle Ages, but it was rapidly stamped out; tuberculosis and syphilis are still prevalent in those countries today.

(2) Since time immemorial there has been an unnatural dread towards leprosy on account of the disfiguring symptoms it gives rise to. In the Middle Ages, the lepers, of which there were hundreds of thousands in Europe, were cast off and barbarously treated. Today, these steps are considered too severe, but public opinion still demands segregation.

(3) It is the best and apparently the only way to eradicate the disease.

(4) New proposed modifications tending to humanize our laws are (a) treatment of incipient cases in dispensaries and (b) segregation of hopeful cases in "regional treatment stations," etc. (The foregoing are suggestions for an answer.)

#### TREATMENT

31. Is leprosy curable?

Leprosy is curable in its incipient stages. But once the disease has become widespread and generalized throughout the body, its cure becomes problematical. Even in the more advanced cases, however, the progress of the disease may be arrested, the disease rendered inactive, the superficial surfaces of the body rendered free from germs. Such cases are the so-called "negative lepers."

32. What is meant by the expression "leprosy is self-limiting disease"?

By "self-limiting" is meant the tendency for disease to disappear even without the use of medicines, provided the resistance of the body is built up and increased. It means that the natural defenses of the body may be improved as to gain the upperhand and the invading germs are thus killed, so that the disease gets cured, even without the use of medicines.

Weeds grow only in an unclean yards; leprosy develops in unclean and predisposed bodies. Even after the germs have already gained a foothold in the body, if the resistance is increased by proper food, hygienic habits, and exercise, they may eventually be killed up by the protective devices of the body without the use of a particular drug.

33. What is the treatment of leprosy?

The treatment of leprosy may be divided into two main parts, namely, (1) drug treatment and (2) non-medical treatment.

The principal drugs used in the treatment of leprosy are the chaulmoogra and related oils, and their derivatives. The real chaulmoogra oil (Tarakogenos Kurzu) is hard to obtain and is rather expensive so that a substitute, the Hydrocarpus Wigh-tiana oil, is now generally used. Its therapeutic effects is the same as the real chaulmoogra oil.

The purified whole oil may be injected without any modification; in the Philippines the drug of choice are the ethylesters of this oil combined with one-half per cent iodine. The Mercado formula consists of chaulmoogra oil mixed with olive oil and several other medical components.

The non-medical treatment is also very important, and the failure of the treatment in many cases is due to failure to give proper consideration to this phase of the treatment. The importance of proper food, cleanliness and exercise has already been mentioned elsewhere. These measures are even much more important in the case of the leper under treatment.

34. Is there no treatment for leprosy that can be taken by mouth?

We do not know of any effective drug for the treatment of leprosy which can be taken by mouth. The chaulmoogra and allied oils are very irritating to the stomach.

35. When should the treatment be started?

As soon as the diagnosis of leprosy has been made by a competent physician. It is not necessary to wait until the bacteriological examination is positive. The earlier the treatment is started, the brighter the prospect of a real cure.

36. How long will the treatment take?

This varies according to the duration and advancement of the disease and the vigor and resistance of the patient. In very early cases with well localized initial lesions, all traces of the disease may disappear in six months. In older incipient lepers with bacteriologically negative lesions, the average duration of the treatment is one year, while once the lesions become bacteriologically positive the treatment on the average takes at least two years before the patient becomes negative.

37. Why should the treatment be given by a competent physician?

In the first place, unless the treatment is properly given, good results can not be obtained. The drugs used are also not en-

tirely harmless and in the presence of tuberculosis or diseases of the kidney, they may do much harm unless properly administered by an experience physician:

38. What happens to the leper if he is not treated?

The disease progresses to its advanced and disfiguring stages, the fingers and toes are lost, ulcers break out all over the body, the eyes are involved and blindness ensues, the nose is deformed, the throat becomes involved and eating and breathing become difficult and painful. In other words, the patient becomes a hopeless and appalling piece of humanity.

39. Will the treatment prevent this?

Yes, provided it is perfectly given and the case is not too advanced.

40. Are private physicians allowed to treat lepers?

(See revised regulations, paragraph 48.)

41. Are patients required to pay for the medicines and services of the physicians?

If the treatment is given by private physician, yes; but if by the physician of the Philippine Health Service, no, because the regulation obligates all the Service physicians to render and administer the anti-leprosy treatment free of charge in a weekly fixed day in the public dispensaries for the benefit of negative lepers, suspicious cases, contacts, etc.

42. Can all lepers be treated in outdoor dispensaries or clinics?

No; only incipient cases, negatives under parole, discharged negatives, and non-leprous contacts can be treated in skin clinics or dispensaries. All positive lepers have to be isolated and treated either in provincial detention camps or in treatment stations if advisable or in Culion.

43. Are anti-leprotic medicines available in all health offices in the Philippines?

All offices of the Service in the provinces and municipalities are required to have sufficient amount of anti-leprotic drugs, and the officers are required to requisition in case that there is none available in the office.

44. If a patient has been in contact with a leper or has leper relatives, should he be treated?

Yes, he should receive treatment and follow carefully all instructions issued to him by the Philippine Health Service.



45. Is the treatment free in such cases?

Yes.

46. Should negatives and incipient lepers marry?

They should not marry until they have remained uninterruptedly negative for at least five years, and provided they have been receiving the treatment continuously during that time.

## MISCELLANEOUS

---

### AGUSAN

During the two floods which occurred in Butuan within the month of March, all precautions were resorted to prevent the outbreak of any dangerous communicable disease. The personnel were engaged in the anti-cholera and typhoid vaccination, disposition of dead animals and house to house inspection. Most of the time was spend to the arrangement of the hospital with regard to water supply, waste disposal, cleaning of the buildings, beautification of the site and complete work of renovation of the hospital equipment.

The general health condition of the Province has been improved a great deal, particularly, the influenza condition.

### ALBAY

The general health index is good. There are no epidemics, though there are still mild cases of influenza. The prevailing diseases are influenza, pulmonary tuberculosis, convulsion of infants, acute bronchitis, and Malaria.

The smallpox vaccination campaign has been carried on very actively. The 9,713 vaccinations having been performed by the two vaccinating parties sent to the island of Catanduanes, were as follows: Baras, 1,314; Bato, 3,778; Calolbon, 570; and Virac, 4,051. This work will be pushed very extensively in all of the towns until the rainy season is over.

### CAPIZ

The general health condition in the province was found good. Better discipline has been shown by the sanitary personnel. Vaccinations were successfully executed with few exceptions which were subject of administrative action.

### CEBU

The general health condition of the district during the month was satisfactory and no epidemic of any kind of contagious disease has been registered, with the exception of sporadic cases of varicella in the different municipalities.

### ORIENTAL NEGROS

A case of malaria with enlarge spleen was found in the barrio of Pinokawan, municipality of Vallehermoso, also larvæ of *Anopheles minimus* were found. Proper instruction was given of the respective president of sanitary division for the control of malaria in that barrio.

The result of the bacteriological examination of the water of the spring in the barrio of Panokibon in the municipality of Zamboanguita was found satisfactory.

In general, the health condition of this district during the month is excellent.

#### ROMBLON

The establishment of a proper public dispensary in the municipality of Odiongan and the construction is to be commenced in accordance with the plan of a standard progressive public dispensary of the Philippine Health Service.

#### SORSOGON

The construction of the Tahiran leper camp was terminated March, 1928. This camp consists of a guardhouse, a male department and a female department. The total cost was being estimated at the sum of ₱500.

In the provincial jail, a prisoner was found of having acute conjunctivities and some with scabies. They were all given treatment and got well.

The health condition of the province is satisfactory and the inhabitants enjoy in good health. The health index was being normal. With the exception of the two varicella cases of Magallanes and Donsol, no epidemic of any kind has been registered in the entire province. The prevailing diseases during the month were acute bronchities, convulsions of infants, beriberi infants, brocho-pneumonia, intestinal parasites, congenital debility, tuberculosis of the respiratory system, malaria, and influenza.

#### ZAMBALES

The general health index for the district is "normal." The communicable diseases registered during the month were: Influenza in Candalaria: 1 case, 0 death. Measles in Iba: 1 case, 1 death; in Castellejos: 2 cases, 0 death; and in Olongapo, Subic: 2 cases, 0 death.

#### STIMSON TO LOOK INTO DISEASES

Leprosy, tuberculosis, and malaria will be among the first health problems Governor-General Stimson will take up in connection with the improvement of the sanitation of the Philippines.

Governor Stimson is taking a keen interest in the leprosy campaign started by Governor-General Wood, and expects to continue it in the Philippines with a view to minimizing the number of cases in the Islands. He is also keenly interested in the tuberculosis and malaria problems here.

Major Hitchens, health adviser to the Governor-General, is getting ready for all questions regarding health that may be taken up with him by the Governor-General.

#### NO NEED TO FEAR SMALLPOX EPIDEMIC

Manila population should not fear smallpox epidemic for it is not likely to break up in the city with the rigid vigilance of the Quarantine Service and the successful anti-smallpox vaccination campaign launched to break out in the city with the rigid vigilance of the quarantine declared Saturday.

Only less than 10 per cent of the city population has not been vaccinated, the health records show.

The reported cases of smallpox in San Lazaro Hospital are in reality cases of varicella, or chicken pox, investigations made by health officials, disclosed.



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of March, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1928<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>324,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
<b>Total.....</b>	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,818
10. Ermita.....	16,347
11. Malate.....	16,688
12. Paco.....	16,244
13. Pandacan.....	5,987
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,663</b>
<b>Grand total.....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, MARCH, 1928**

Date	Pres- sure <sup>1</sup> mean	Temperature					
		In shade <sup>2</sup>				Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.
	mm.	°C.	°C.		°C.		8 a. m. mean
1-10.....	758.46	26.7	33.7	3	20.6	9	28.4
11-20.....	60.93	26.2	33.4	16	20.0	20	28.7
21-31.....	60.10	27.2	35.0	31	19.3	23	28.9
							2 p. m. mean
							°C.
							°C.

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	76.5	81.6	1	70.7	4
11-20.....	74.0	82.6	13	70.0	16
21-31.....	71.6	73.1	31	68.4	23

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (open air)		
		Velocity					
		Total	Daily total maxi- mum	Day	Total	Daily maxi- mum	Day
		Kms.	Kms.		mm.	mm.	
1-10.....	SE, SW	1,910.0	304.0	8	46.4	6.5	10
11-20.....	SE	1,689.0	225.0	16	45.2	7.4	17
21-31.....	SE	1,861.5	201.5	22	63.7	6.9	29

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	75 50	10 20	3	1.0	1
11-20.....	51 15	10 05	18	8.5	1
21-31.....	92 25	9 35	30	0.0	0

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rate per 1,000
Americans.....	3	10	13	48.87
Filipinos.....	592	548	1,140	45.08
Spaniards.....	1	1	2	6.08
Other Europeans.....	1	2	3	31.89
Chinese.....	23	21	44	29.03
All others.....	6	3	9	48.51
<b>Total and average.....</b>	<b>626</b>	<b>584</b>	<b>1,210</b>	<b>43.93</b>

**NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MEISIC:</b>							
1. Tondo.....	171	147	321	10	9	19	340
2. San Nicolas.....	29	42	71	5	3	8	79
3. Binondo.....	22	17	39				39
<b>Total.....</b>	<b>225</b>	<b>206</b>	<b>431</b>	<b>15</b>	<b>12</b>	<b>27</b>	<b>458</b>
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	66	52	118	7	4	11	129
5. Quiapo.....	17	15	32	2	3	5	37
6. San Miguel.....	23	13	36	1		1	37
7. Sampaloc.....	95	85	180	10	9	19	199
<b>Total.....</b>	<b>201</b>	<b>165</b>	<b>366</b>	<b>20</b>	<b>16</b>	<b>36</b>	<b>402</b>
<b>No. III, PACO:</b>							
8. Port Area.....	1		1				1
9. Intramuros.....	20	26	46		2	2	48
10. Ermita.....	36	30	66	3	2	5	71
11. Malate.....	42	56	98	2	4	6	104
12. Paco.....	25	35	60	2		2	62
13. Pandacan.....	14	13	27	2		2	29
14. Santa Ana.....	18	17	35				35
<b>Total.....</b>	<b>156</b>	<b>177</b>	<b>333</b>	<b>9</b>	<b>8</b>	<b>17</b>	<b>350</b>
<b>Grand total.....</b>	<b>582</b>	<b>548</b>	<b>1,130</b>	<b>44</b>	<b>36</b>	<b>80</b>	<b>1,210</b>

Attended by physicians, living, 338; Stillbirths, 18.

Attended by midwives, living, 76; Stillbirths, 0.

Attended by families, living, 796; Stillbirths, 17.

**NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE  
CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans .....				
Filipinos .....	369	302	671	26.50
Spaniards .....	1		1	6.03
Other Europeans .....				
Chinese .....	19	4	23	15.18
All others .....	5	1	6	32.34
<b>Total and average .....</b>	<b>394</b>	<b>307</b>	<b>701</b>	<b>25.45</b>

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEISIC:</b>			
1. Tondo .....	122	106	228
2. San Nicolas .....	30	16	46
3. Binondo .....	12	9	21
<b>Total .....</b>	<b>164</b>	<b>131</b>	<b>295</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz .....	66	44	110
5. Quiapo .....	18	9	27
6. San Miguel .....	7	5	12
7. Sampaloc .....	67	44	111
<b>Total .....</b>	<b>158</b>	<b>102</b>	<b>260</b>
<b>No. III, PACO:</b>			
8. Port Area .....	1	1	2
9. Intramuros .....	8	9	17
10. Ermita .....	4	11	15
11. Malate .....	27	26	53
12. Paco .....	15	11	26
13. Pandacan .....	7	6	13
14. Santa Ana .....	10	10	20
<b>Total .....</b>	<b>72</b>	<b>74</b>	<b>146</b>
<b>Grand total .....</b>	<b>394</b>	<b>307</b>	<b>701</b>



# NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED

[Stillbirths not included]

Social condition	Male	Female
Married.....	109	87
Divorced.....		
Widowed.....	49	66
Single.....	295	198
Conditions not stated.....		
<b>Total</b> .....	<b>453</b>	<b>351</b>
<b>Grand total</b> .....	<b>804</b>	

Stillbirths 35.

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	120	93	8	2	223
1 year plus.....	38	36	4	2	80
2 years plus.....	22	14	2	4	42
3 years plus.....	8	8	1		17
4 years plus.....	5	4		1	10
5 to 9 years.....	9	6	1	1	17
10 to 14 years.....	4	3	1	2	10
15 to 19 years.....	14	10	3	2	29
20 to 24 years.....	24	10	6	3	43
25 to 29 years.....	19	11	4	5	39
30 to 34 years.....	14	12	2	3	31
35 to 39 years.....	12	14	3	1	30
40 to 44 years.....	9	7	3	8	27
45 to 49 years.....	13	10	3	2	28
50 to 54 years.....	20	10	4	1	35
55 to 59 years.....	15	6	3	1	25
60 to 64 years.....	12	7	2		21
65 to 69 years.....	10	4	6	1	21
70 to 74 years.....	6	9			15
75 to 79 years.....	9	3	1	1	14
80 to 84 years.....	6	8	1	2	17
85 to 89 years.....	2	6	1		9
90 to 94 years.....	1	8			9
95 to 99 years.....	1	7			8
100 years and over.....	1	1		1	3
Age not stated.....					
<b>Total</b> .....	<b>394</b>	<b>307</b>	<b>59</b>	<b>43</b>	<b>803</b>

NOTE.—One female Filipina, 14 years of age, permanent residence unknown, not included in the above table.



43	Cancer and other malignant tumors of the buccal cavity.....	1	1	1	1
44	Cancer and other malignant tumors of the stomach, liver, .....	2	1	3	3
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....	1	1	1	1
49	Cancer and other malignant tumors of other or unspecified organs.....	4	1	5	5
52	Chronic rheumatism, osteoarthritis, gout.....	2	3	5	5
53	Scurvy.....	1	1	1	1
55	Beriberi:				
	a. Infants.....	14	9	23	23
	b. Adults.....	1	1	2	2
56	Rickets.....	3	1	4	4
57	Diabetes mellitus.....	1	1	1	1
58	Anemia, chlorosis:				
	a. Other anemias and chlorosis.....	1	1	1	1
59	Diseases of the pituitary gland.....	1	1	1	1
60	Diseases of the thyroid gland:				
	a. Exophthalmic goiter.....	1	1	1	1
70-86	III. Diseases of the nervous system and of the organs of special sense				
71	Meningitis:				
	a. Simple meningitis.....	4	5	10	10
73	Other diseases of the spinal cord.....	1	1	1	1
74	Cerebral hemorrhage, apoplexy:				
	a. Cerebral hemorrhage.....	5	5	11	11
75	Paralysis without specified cause:				
	a. Hemiplegia.....	3	1	4	4
76	General paralysis of the insane.....	1	1	1	1
77	Other forms of mental alienation.....	2	2	2	2
78	Epilepsy.....	1	1	1	1
87-96	IV. Diseases of the circulatory system				
88	Endocarditis and myocarditis (acute).....	1	1	2	2
89	Angina pectoris.....	2	2	2	2
90	Other diseases of the heart.....	6	1	9	9
91	Diseases of the arteries:				
	a. Arteriosclerosis.....	1	1	2	2
	b. Arterioclerosis.....				
97-107	V. Diseases of the respiratory system				
99	Bronchitis:				
	a. Acute.....	17	17	34	34
	b. Chronic.....	5	3	8	8
100	Bronchopneumonia:				
	a. Bronchopneumonia.....	62	45	110	110
	b. Capillary bronchitis.....	6	2	8	8









## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
164—														
164	Senility.....			2	3									5
165-203	<i>XIII. Old age</i>													
188	<i>XIV. External causes</i>													
198	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	c. Automobile accidents.....			1	1									2
204-205	Homicide by cutting or piercing instruments.....			1										1
205	<i>XV. Ill-defined diseases</i>													
	Cause of death not specified or ill-defined:													
	a. Ill-defined.....			1										1
	Total.....	2		55	43					2				102
	Grand total.....	2		98						2				102



INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF MARCH, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month			
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days					
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female				
All causes.....	128	95		20	17	14	5	8	4	3	3	5	1	50	30
COMMUNICABLE DISEASES:															
Typhoid and paratyphoid fever (1)															
Smallpox (6)															
Measles (7)															
Whooping-cough (9)															
Diphtheria (10)															
Influenza (11)															
Asiatic cholera (14)															
Dysentery (16)															
Meningococcus meningitis (24)															
Other epidemic and endemic diseases (25)															
Tetanus (29)															
Other infectious diseases (1-42) <sup>1</sup>															
Beriberi (56)															
Diseases of the nervous system (70; 71; 80; 85)															
Respiratory diseases (99; 100; 101; 107)															
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)															
Congenital malformation (159)															
Early infancy (160; 161; 162; 163)															
All other causes (43-205) <sup>1</sup>															

Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

<sup>1</sup> Other than those specified above.



## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	22,196
Number of rats caught by spring traps.....	3,096
Number of cage wire traps set.....	526
Number of rats caught by cage wire traps.....	1
Number and kind of baits (coconuts).....	23,250
Number of poison portions placed.....	22,891
Number of rats found poisoned.....	418
Number of rats killed by clubs and other weapons.....	1,108
Number of rats found dead from other causes.....	517
Total number of rats otherwise caught, found dead, or killed.....	5,135
Total number of rats sent to the laboratory for examination.....	5,135
Total number of rats found positive for plague.....	0

---

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF MARCH, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.	No. 1.....	3	1	.....	.....	.....	.....	.....	3	1	.....	.....	3	1
	No. 2.....	1	1	.....	1	.....	.....	.....	1	1	.....	.....	3	2
	No. 3.....	.....	.....	1	1	.....	.....	.....	.....	.....	2	.....	1	1
	No. 4.....	.....	.....	3	.....	.....	.....	.....	.....	.....	1	1	1	1
II.	No. 5.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 6.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 8.....	.....	.....	.....	.....	.....	.....	.....	3	1	.....	.....	3	1
III.	No. 9.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 10.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 11.....	5	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	5	.....
	No. 12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 13.....	1	.....	1	.....	1	1	.....	2	1	.....	.....	3	1
	No. 14.....	.....	.....	1	1	.....	.....	.....	.....	.....	1	1	1	1
Grand total .....	16	4	8	4	1	1	2	2	17	5	10	6	27	11

**REMARKS:**

Cases confirmed as typhoid fever.....	26
Cases confirmed as paratyphoid fever.....	1
By autopsy.....	0
By blood culture.....	1
By blood reaction.....	10
By urine examination.....	0
By feces examination.....	0
By clinical symptoms.....	15
Cases reported among non resident persons not included in the table.....	22
Deaths reported among non resident persons not included in the table.....	4
Typhoid carrier—None.	

## DYSENTERIES REPORTED DURING THE MONTH OF MARCH, 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home				Total				Grand total	
	Male			Female			Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Cases	Deaths	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.	No. 1	3	1	1	1	1	1	1			4	2	1	1	5	3
	No. 2															
	No. 3															
	No. 4	2		2	1	2	2	2	1	1	4	2	3	2	7	4
II.	No. 5															
	No. 6															
	No. 7															
	No. 8	1		2	2	1	1	1	3	3	1	1	5	5	6	6
	No. 9	1		1	1						1		1	1	1	1
	No. 10															
III.	No. 11															
	No. 12		1	1								1	1		1	1
	No. 13															
	No. 14															
Grand total	7	2	7	5	4	4	4	4	4	4	11	6	11	9	22	15

## REMARKS:

Amoebic dysentery

Bacillary dysentery

Unspecified

Cases reported among nonresident persons not included in the table.

Deaths reported among nonresident persons not included in the table.

Dysentery carrier—None.

2

7

13

3

2

**CHOLERA REPORTED DURING THE MONTH OF MARCH, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.....	No. 1.....													
	No. 2.....													
	No. 3.....													
	No. 4.....													
II.....	No. 5.....													
	No. 6.....													
	No. 7.....													
	No. 8.....													
	No. 9.....													
	No. 10.....													
III.....	No. 11.....													
	No. 12.....													
	No. 13.....													
	No. 14.....													
Grand total.....														

**REMARKS:**

No nonresident case was reported during the month.

Cholera carrier—11

## CONFIRMED CASES

Health districts	Hospital				Home				Total			
	Male		Female		Male		Female		Male		Female	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I...	4	2	3	2					4	2	3	2
No. 1.....												
No. 2.....												
No. 3.....	1			1					1			1
No. 4.....	1		1						1		1	
No. 5.....			2								2	
No. 6.....												2
No. 7.....	1								1			
No. 8.....												1
No. 9.....	1		1						1		1	
No. 10.....												2
No. 11.....	2		1						2		1	
No. 12.....	1								1			3
No. 13.....												1
No. 14.....												
Grand total.....	11	2	8	3					11	2	8	3
												19
												5

## REMARKS:

Cases reported among nonresident persons not included in the table.....

9

Deaths reported among nonresident persons not included in the table.....

3

Diphtheria carrier—20

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF MARCH, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria	25	7	3	3
Varicella	22	18		
Varioloid				
Smallpox				
Measles	10	8	2	3
Whooping cough				
Influenza	7	7	1	2
Bubonic plague				
Encephalitis lethargica	1		1	
Meningitis cerebrospinal epidemic	1		1	
Tuberculosis of the respiratory system	147	139	81	55
Tuberculosis of other organs	8	14	7	13
Beriberi, infantile	14	9	14	9
Beriberi, adults	2		2	

**NON-RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria	15	4	2	
Varicella	2			
Varioloid				
Smallpox				
Measles		1		
Whooping cough				
Influenza	3	2		1
Bubonic plague				
Encephalitis lethargica				
Meningitis cerebrospinal epidemic	1		1	
Tuberculosis of the respiratory system	25	22	7	10
Tuberculosis of other organs	3		3	
Beriberi, infantile	1		1	
Beriberi, adults				

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF MARCH, 1928**

Sera and vaccines	On hand March 1, 1928	Received during the month	Total to be accounted for	Distribut- ed during the month	Remaining at the end of the month
Anti-diphtheric serum (tubes)	4	275	279	92	187
Anti-dysenteric serum (ampoules)	106	200	306	153	153
Anti-tetanic serum (units)	700,000		700,000	400,000	300,000
Cholera vaccine (c. c.)	2,400	30,000	32,400	28,200	4,200
Dried vaccine virus (units)	72,600	100,000	172,600	128,250	44,350
Dysenteric vaccine (c. c.)	15,060	45,000	60,060	41,940	18,120
Fresh vaccine virus (units)	120,800	200,000	320,800	186,100	134,700
Gonococcus vaccine (ampoules)		50	50	50	
Mixed typhoid cholera vaccine (c. c.)	83,340	150,000	233,340	122,700	110,640
Normal horse serum (ampoules)		50	50	50	
Typhoid vaccine (c. c.)	9,720	17,400	27,120	15,900	11,220



Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated								
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over		Total		
			Never	Successfully	Unsuccessfully	Positive	Negative	Positive	Negative	Positive		Negative	
No. 1.	Tondo.....	604	363	21	220	291	186	14	2	1	.....	306	188
	San Nicolas.....	1,138	94	995	49	112	28	12	1	.....	.....	124	29
	Binondo.....	106	50	5	51	52	38	6	1	.....	.....	59	39
	Santa Cruz.....	1,364	284	999	81	197	66	18	3	367	31	582	100
	Quiapo.....	171	82	55	34	44	24	14	2	3	.....	61	26
No. 2.	San Miguel.....	44	16	18	10	8	7	2	1	4	.....	14	8
	Sampaloc.....	808	267	409	132	180	90	6	3	4	1	190	94
	Port Area.....	2	2	.....	.....	2	.....	.....	.....	.....	.....	2	.....
	Intramuros.....	276	129	15	132	113	72	11	2	2	1	126	75
	Ermita.....	180	82	6	92	118	70	5	.....	1	.....	124	70
No. 3.	Malate.....	183	92	1	90	77	62	5	1	.....	.....	82	64
	Paco.....	159	78	8	73	41	35	12	4	1	1	54	40
	Pandacan.....	58	14	5	39	8	8	1	.....	.....	.....	9	8
	Santa Ana.....	68	27	2	39	46	21	4	1	.....	.....	50	22
	Total.....	5,161	1,580	2,539	1,042	1,289	707	110	21	384	35	1,783	763

Vaccine virus		Units	Units
Remaining from last month.....	.....	4,870	.....
Received during the month.....	.....	6,525	.....
Used during the month.....	.....	.....	5,930
Remaining for next month.....	.....	.....	5,465
Total.....	.....	11,395	11,395

CITY OF MANILA DURING THE MONTH OF MARCH, 1928

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.....	Tondo.....	472	282	356	236	828	518
	San Nicolas.....	2				2	
	Binondo.....						
	Santa Cruz.....	48	20	19	11	67	31
No. 2.....	Quispo.....						
	San Miguel.....	8	8	5	6	13	14
	Sampaloc.....	25	22	15	13	40	35
	Port Area.....						
No. 3.....	Intramuros.....	53	58	9	21	62	79
	Ermita.....						
	Malate.....	15	2	4		19	2
	Paco.....	8	20	5	3	13	23
	Pandacan.....						
	Santa Ana.....						
Total.....		631	412	413	250	1,014	702

Health districts	Municipal districts	Number of injections made in—												Total number of injections					
		Adults						Children						First		Second		Third	
		First injections		Second injections		Third injections		First injections		Second injections		Third injections		V.	R.	V.	R.	V.	R.
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.						
No. 1.....	Tondo.....	1,707	1,411	.....	1,532	.....	1,993	.....	1,113	.....	997	.....	3,700	.....	2,524	.....	2,529	.....	1,304
	San Nicolas.....	869	772	.....	735	.....	592	.....	659	.....	569	.....	1,461	.....	1,431	.....	1,804	.....	682
	Binondo.....	552	469	.....	399	.....	325	.....	288	.....	283	.....	877	.....	757	.....	1,033	.....	389
	Santa Cruz.....	1,003	963	.....	657	.....	989	.....	893	.....	365	.....	1,992	.....	1,856	.....	.....	.....	.....
	Quiapo.....	503	329	.....	205	.....	207	.....	192	.....	184	.....	710	.....	521	.....	.....	.....	.....
No. 2.....	San Miguel.....	.....	427	.....	316	.....	535	.....	344	.....	220	.....	1,371	.....	771	.....	536	.....	277
	San Mateo.....	856	.....	.....	250	.....	380	.....	102	.....	27	.....	958	.....	418	.....	277	.....	19
	Port Area.....	578	316	.....	13	.....	14	.....	9	.....	6	.....	34	.....	25	.....	828	.....	365
	Intramuros.....	20	16	.....	588	.....	305	.....	320	.....	240	.....	1,123	.....	1,029	.....	252	.....	250
	Ermita.....	818	709	.....	200	.....	216	.....	197	.....	165	.....	543	.....	496	.....	393	.....	350
No. 3.....	Malate.....	327	299	.....	163	.....	191	.....	182	.....	89	.....	500	.....	469	.....	.....	.....	.....
	Paco.....	309	287	.....	150	.....	153	.....	105	.....	60	.....	486	.....	393	.....	.....	.....	.....
	Pandacan.....	333	288	.....	200	.....	120	.....	133	.....	150	.....	414	.....	433	.....	.....	.....	.....
	Santa Ana.....	294	300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total.....	8,149	6,586	.....	5,458	.....	6,020	.....	4,537	.....	3,356	.....	14,169	.....	11,123	.....	8,814	.....	.....

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	2,785	422	863	1,500
Agusan.....	449	65	205	179
Albay.....	7,586	2,455	1,187	3,944
Antique.....	4,294	1,376	1,741	1,177
Bataan.....	2,181	872	337	972
Batanes.....				
Batangas.....	11,222	3,752	2,833	4,637
Bohol.....	12,544	4,129	3,256	5,159
Bukidnon.....	861	314	76	471
Bulacan.....	7,015	2,696	2,076	2,243
Cagayan.....	20,859	3,266	16,106	1,487
Camarines Norte.....	2,018	686	427	905
Camarines Sur.....	3,010	734	619	1,657
Capiz.....	5,437	1,565	1,829	2,043
Catanduanes.....	1,240	254	628	358
Cavite.....	21,646	1,265	17,974	2,407
Cebu.....	13,603	4,373	1,986	7,244
Cotabato.....	2,568	542	1,217	809
Davao.....	5,643	2,935	1,866	842
Ilocos Norte.....	31,861	2,004	24,880	4,977
Ilocos Sur.....	6,243	1,452	1,027	3,724
Iloilo.....	12,201	5,671	2,460	4,070
Isabela.....	2,030	496	317	1,217
Laguna.....	32,282	3,298	26,726	2,258
Lanao.....	5,099	2,789	1,501	809
La Union.....	5,502	1,231	290	3,981
Leyte.....	7,221	2,553	333	4,335
Marinduque.....	431	187	117	127
Masbate.....	21,485	2,633	14,580	4,272
Mindoro.....				
Misamis.....				
Mountain Province.....	8,525	999	3,377	4,149
Nueva Ecija.....	8,735	3,408	1,159	4,168
Nueva Vizcaya.....	1,129	270	179	680
Occidental Negros.....	17,871	4,919	9,534	3,418
Oriental Negros.....				
Palawan.....	213	69	66	78
Pampanga.....	7,492	2,989	620	3,883
Pangasinan.....	5,525	1,892	731	2,902
Rizal.....	5,786	2,010	2,223	1,553
Romblon.....	7,547	1,518	1,942	4,087
Samar.....	962	336	221	405
Sorsogon.....	3,322	882		2,440
Sulu.....	1,581	734	100	747
Surigao.....				
Tarlac.....	5,354	1,528	2,850	976
Tayabas.....	3,779	1,868	667	1,244
Zambales.....	945	277	260	408
Zamboanga.....	1,583	857	180	546
Total.....	329,665	78,611	151,566	99,488

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>—Continued**

Provinces	Inspections of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	246	99	478	371	439	825	1,163	1,295
Agusan.....	18	29	49	141	201	99	268	269
Albay.....	1,300	516	1,037	389	869	652	3,206	1,557
Antique.....	488	148	502	267	493	506	1,483	921
Bataan.....	567	84	608	239	303	106	1,478	429
Batanes.....								
Batangas.....	1,787	371	2,607	1,101	1,738	1,721	6,132	3,193
Bohol.....	1,432	592	1,866	994	2,897	2,596	6,195	4,182
Bukidnon.....	34	30	75	86	181	255	290	371
Bulacan.....	1,827	289	1,535	588	1,108	855	4,470	1,732
Cagayan.....	887	66	1,300	409	4,266	5,320	6,453	5,795
Camarines Norte.....	426	96	638	174	299	143	1,363	413
Camarines Sur.....	453	153	592	169	893	423	1,938	745
Capiz.....	490	94	688	286	1,681	838	2,859	1,218
Catanduanes.....	140	82	182	84	143	133	465	299
Cavite.....	682	126	1,237	715	5,145	6,139	7,064	6,980
Cebu.....	1,510	570	1,560	692	1,729	1,821	4,799	3,083
Cotabato.....	42	29	215	173	533	332	790	534
Davao.....	181	39	515	133	2,020	1,137	2,716	1,309
Ilocos Norte.....	1,236	511	3,798	1,534	12,480	9,133	17,514	11,178
Ilocos Sur.....	599	328	1,097	557	1,164	991	2,860	1,876
Iloilo.....	1,776	381	2,510	634	2,285	1,457	6,571	2,472
Isabela.....	280	97	280	117	580	385	1,140	599
Laguna.....	784	234	1,829	1,132	6,608	10,356	9,221	11,722
Lanao.....	61	53	280	221	849	1,042	1,190	1,316
La Union.....	747	320	913	878	654	1,153	2,314	2,351
Leyte.....	465	200	751	403	391	612	2,207	1,215
Marinduque.....	110	31	16	2	18	7	144	40
Masbate.....	475	79	1,645	400	6,551	3,656	8,671	4,135
Mindoro.....								
Misamis.....								
Mountain Province.....	95	28	430	213	1,374	1,208	1,899	1,449
Nueva Ecija.....	1,230	343	2,222	734	1,624	1,319	5,076	2,396
Nueva Vizcaya.....	179	77	71	66	259	423	509	566
Occidental Negros.....	1,132	213	2,462	644	3,954	4,762	7,548	5,619
Oriental Negros.....								
Palawan.....	1	1	3	2	159	18	163	21
Pampanga.....	792	353	688	347	214	412	1,694	1,112
Pangasinan.....	1,092	158	1,230	292	1,136	861	3,458	1,311
Rizal.....	1,116	449	397	315	489	848	2,002	1,612
Romblon.....	354	177	723	463	1,391	1,215	2,468	1,855
Samar.....	74	37	71	23	266	139	411	199
Sorsogon.....	209	80	390	146	1,314	555	1,913	781
Sulu.....	31	45	181	129	270	269	482	443
Surigao.....								
Tarlac.....	416	205	850	589	620	1,054	1,886	1,848
Tayabas.....	787	228	907	306	711	414	2,405	948
Zambales.....	90	47	159	108	141	215	390	870
Zamboanga.....	82	83	160	214	242	411	484	708
<b>Total.....</b>	<b>26,723</b>	<b>8,171</b>	<b>39,747</b>	<b>17,480</b>	<b>71,282</b>	<b>66,816</b>	<b>137,752</b>	<b>92,467</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTIDISENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	719	454		1,173
Albay.....	248	192		440
Bukidnon.....	189			189
Bulacan.....	206	106		312
Camarines Sur.....	926	348		1,274
Capiz.....	348	113		461
Laguna.....	217	132		349
La Union.....	60	31		91
Mindoro.....	103	1		104
Pampanga.....	259	43		302
Tarlac.....	154	50		204
Tayabas.....	287	37		274
<b>Total.....</b>	<b>3,666</b>	<b>1,507</b>		<b>5,173</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Albay.....	4,474	1,058	85	5,617
Antique.....	1,744	1,143		2,887
Bataan.....	73			73
Batangas.....	142	210		352
Bulacan.....	28	690		718
Camarines Sur.....	227	52		279
Iloilo.....	212	51		263
Laguna.....	95	49		144
Pangasinan.....	419	366		785
Rizal.....	7,748	2,797		10,545
Tarlac.....	776	26		802
<b>Total.....</b>	<b>15,938</b>	<b>6,442</b>	<b>85</b>	<b>22,465</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injection	Third injection	Total
Albay.....	12	13	19	44
Batangas.....	27	23		50
Bukidnon.....	15			15
Bulacan.....	445	454	58	957
Camarines Sur.....	36			36
Iloilo.....		120		120
Laguna.....	1,516	1,094	646	3,256
Mindoro.....	60	30		90
Pangasinan.....	153	99	38	290
Rizal.....	152	70	26	248
Tarlac.....	1,011	237	3	1,251
<b>Total.....</b>	<b>3,427</b>	<b>2,140</b>	<b>790</b>	<b>6,357</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	643	544		1,187
Agusan.....	285	55		340
Antique.....	946	277		1,223
Bataan.....	4,084	3,257		7,341
Batanes.....	203	182		385
Batangas.....	855	471		1,326
Bohol.....	724	678		1,402
Bukidnon.....	120	321		441
Bulacan.....	27	27		54
Cagayan.....	322	201		523
Camarines Sur.....	127	61		188
Capiz.....		101		101
Cebu.....	3,590	1,075		4,665
Iloilo.....	5,300	2,331		7,631
Laguna.....	250	201		451
Lanao.....	2,599	1,166		3,765
La Union.....	2,163	1,028		3,191
Marinque.....	1,475	518		1,993
Mindoro.....	55			55
Nueva Ecija.....	387	350		737
Nueva Vizcaya.....	680	619		1,299
Occidental Negros.....	3,690	1,847		5,537
Pampanga.....	24,171	1,283		25,454
Pangasinan.....	3,891	2,649		6,540
Rizal.....	425	399		824
Tarlac.....	1,773	1,121		2,894
Tayabas.....	1,879	1,210		3,089
Zamboanga.....	608	78		686
Total.....	61,272	22,050		83,322

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF MARCH, 1928**

(No case and no death reported during the month.)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF MARCH, 1928**

(No case and no death reported during the month.)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF MARCH, 1928**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, March 1, 1928:</b>				
Minor.....	121	92	75	288
Sewer.....	25	51	4	80
Vacating.....	8	10	.....	18
Filling.....	24	36	21	81
<b>Total.....</b>	<b>178</b>	<b>189</b>	<b>100</b>	<b>467</b>
<b>Orders issued during the month:</b>				
Minor.....	11	5	83	99
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	1	.....	1	2
<b>Total.....</b>	<b>12</b>	<b>5</b>	<b>84</b>	<b>101</b>
<b>Orders completed during the month:</b>				
Minor.....	7	3	3	13
Sewer.....	.....	2	.....	2
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>15</b>
<b>Orders cancelled during the month:</b>				
Minor.....	.....	.....	.....	.....
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	.....	.....	.....	.....
<b>Orders pending, March 31, 1928:</b>				
Minor.....	125	94	155	374
Sewer.....	25	49	4	78
Vacating.....	8	10	.....	18
Filling.....	25	36	22	83
<b>Total.....</b>	<b>183</b>	<b>189</b>	<b>181</b>	<b>553</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	42	70	48	160
<b>Permits for minor building constructions:</b>				
Approved.....	89	63	39	191
Disapproved.....	13	7	2	22
<b>New buildings completed.....</b>	<b>21</b>	<b>28</b>	<b>23</b>	<b>72</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	22	90	32	144
Disapproved.....	8	7	.....	15
<b>Prosecutions:</b>				
Convictions.....	.....	.....	.....	.....
Dismissals.....	.....	1	.....	1
Amount of fines.....	.....	.....	.....	.....
<b>Plumbing permits issued.....</b>	<b>45</b>	<b>82</b>	<b>48</b>	<b>175</b>
<b>Plumbing projects completed.....</b>	<b>37</b>	<b>73</b>	<b>50</b>	<b>160</b>
<b>Premises connected to the sanitary sewer to February 29, 1928.....</b>	<b>2,546</b>	<b>4,367</b>	<b>763</b>	<b>7,676</b>
<b>Connected during the month.....</b>	<b>5</b>	<b>4</b>	<b>8</b>	<b>17</b>
<b>Total.....</b>	<b>2,551</b>	<b>4,371</b>	<b>771</b>	<b>7,693</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

APRIL, 1928

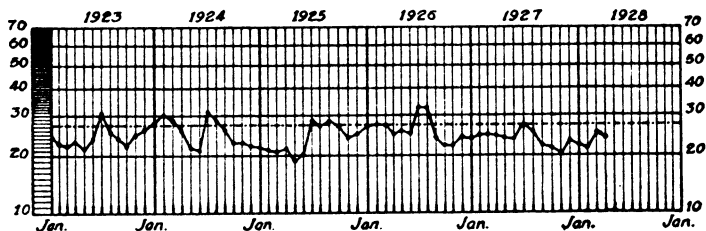
No. 4

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



ANNUAL DEATH RATES BY MONTH CITY OF MANILA



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSERIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
The Nursing Profession in the Philippines, by Dr. SIXTO Y. OROSA.....	179
Leprosy Work in the Province of Cebu, by JOSE RODRIGUEZ.....	183
Memorandum .....	188
Mosquito and Diseases.....	189
Miscellaneous .....	191
General Statistics .....	193

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**APRIL, 1928**

**No. 4**

**THE NURSING PROFESSION IN THE PHILIPPINES**

By SIXTO Y. OROSA, M.D.

*Philippine Health Service*

Unknown before the advent of America to the Philippines the nursing profession has now become a well-established institution and has demonstrated the high potentialities of the Filipino woman. In spite of its being new for her, in spite of its being incompatible with our tradition relative to the place of the Filipino woman and to her inborn timidity, she has in general more than held her own, and amidst difficulties and dangers performed the arduous duties of field and institutional nursing, to her credit and to that of her country. For the last 20 years she has shown that her seclusion at home for centuries did not dwarfed her character. She has shown that the performance of the duties of a nurse which implies freedom of action without the restraint of chaperons is in keeping with her natural tenderness and modesty, which treasure a character, sweet but strong.

Having been a close witness of the work and activities of the nurses both in hospitals, in isolated stations, and in city and barrio homes, I sincerely consider the nurse, the teacher, and the physician to be the real pioneers of our Government today. In Mindanao and Sulu I have seen nurses conquer the prejudices of Mohammedan families and communities against our present ways of treatment through their devotion to duty, and it is a great satisfaction to say that in spite of the law and order upheavals in the Moroland, the position of the health personnel has ever remained secure in the hearts of our Mohammedan brothers.

The male nurse has done his share in the winning of the Mohammedans. Often stationed in the out-of-the-way districts amidst new environments, amongst strange people, away from

friends and relatives and distant from the gayeties of society, frequently without other means of transportation except his weary feet or the swift but unreliable vinta, sheltering now under forest trees, now braving stormy seas, he has effectively carried the science and art of sanitation and hygiene into the most isolated districts and has ministered to the sick in the most distant home. None the less perhaps can be said of those rendering services in the Christian provinces.

The discussion which centered around the question as to whether the Government should graduate more nurses than it can actually employ has not as yet subsided. Considering that there is a nurse for every 8,000 inhabitants we have every reason to believe that the field of nursing in the Philippines, both private and otherwise, is still wide open. Certainly, as our masses become more accustomed to the benefits and blessings of modern medicine, it is safe to say that a number of private nurses ought to be able to make a decent living in our larger towns. The trouble, I am afraid, lies in the fact that there has not been enough enterprise to enter this new and from all appearances profitable venture, and perhaps to the fact that in the past the fees charged by private nurses were rather exorbitant.

There are at present eight hospitals under construction, and practically every province has applied for Insular aid for the construction of hospitals under Act 3114. I dare say that two or three years from now nurses will be no greater demand. There are those who lament the fact that a nurse marries soon after graduation. But let me say that if a nurse does nothing else except become a good wife and an excellent mother after graduation, she shall have accomplished a worthy mission, and the efforts and expense of the Government in educating her shall have been fully justified.

While I do not mean to be a party in the spirited controversy now occupying the best minds of our country as to what the real position of our women should be, some advocating unlimited freedom for them and the imitation of everything foreign, while others advocating their seclusion at home and the rejection of everything extraneous, I for one believe that it is best for us to take the middle ground. Let us adopt what is good and reject what is bad from other countries. Let us recall these lines of Pope:

Be not the first by which the new is tried,  
Nor yet the last to cast the old aside.

Let us remember the counsel of our elders. "In Medio Virtus." Furthermore, not everything good that we see in foreigners can be safely introduced, for we can only absorb to our benefit those traits which will be suitable for us, taking into consideration our climate, resources, psychology, tradition, etc. And let me add that what is more important than mere superficial conventionalities is the safeguarding of our virtues and the preservation of our character. May our virtues remain undefiled and our character unblemished. This is the more important for a nurse often has to travel alone, remain with patients and accompany physicians without the guiding eyes of her parents or tutors. Next only to the preservation of her character is the care that her reputation may remain unsullied. For it is not enough that she should be pure, but it is equally necessary and important that the public should think her pure.

Like bubbles that disappear into the air, the daily occurrences of our life vanish into oblivion. But the significance of this day will linger long in your memories. Today you receive your diplomas earned after years of unremitting labor and toil. In congratulating you for this memorable occasion allow me to give you some warning. Guard that this symbol of your sacrifices may not be smirched. Endeavor that it may forever be an honor to yourselves and a credit to your Alma Mater and profession. You will soon launch yourselves into the struggle of life, and contribute your share in the uplift and development of our country. Often you will have no guide except unwritten rules, and no counsel except your conscience and your spirit of service. Your diploma will be an honor or a discredit to you, just as you will it to be. Its use or abuse will mean your disgrace or exaltation.

Your mission is not a song—very likely, it will be to you a wail of anguish and pain. But do not let this daunt you, for life without struggle is life not worth living. Ever strive to be the personification of patience, sympathy, and love, for nursing as a profession has something of the divine. Show not your own cares and sorrows that they may not reflect on your patients, but let your pure heart and generous soul shine forth to console grief, relieve suffering, and soothe the mind of those in distress.

Let not the glare of gold bedim the horizon of service, let not difficulties and obstacles deviate you from the straight path, and let not selfish ambition deter you from the fulfilment of a

mission which demands self-sacrifice and abnegation. Forge ahead to emulate those who died that others may be saved.

You will be the focus of observant and scrutinizing eyes. Take care, therefore, that others may not be misled. You have a golden opportunity to preach the gospel of health by precept and example. May your calling shed where there was darkness, science where there was superstition, cleanliness where there was filth, health where there was disease, and like a chisel that makes a beautiful and lasting impression on marble in the hands of a sculptor, may your lifework mould families into healthy and vigorous communities.

## LEPROSY WORK IN THE PROVINCE OF CEBU

By JOSE RODRIGUEZ

*Philippine Health Service, Cebu, Cebu*

One of the most important advances made in recent years with regard to our knowledge of leprosy was the discovery that the disease can be diagnosed in an incipient stage months or years before the presence of the leprosy germ can be demonstrated by the ordinary bacteriological examination. The importance of this discovery is at once made apparent if it is realized that the disease during the period is practically non-infectious and the treatment is very effective. The problem now facing our health authorities lies in endeavoring to reach the patients while still in this preinfectious stage so that the treatment may be instituted as early as possible. In this manner, the progress of the disease may be arrested and segregation avoided. Furthermore, due to elimination of active disseminators, the spread of the disease is prevented and its total eradication rendered possible. These advances are likely to radically modify present methods of leprosy control everywhere.

The application of this knowledge to the field is, however, beset with many difficulties. An intensive campaign of education is necessary, not only among the laity, but also among the physicians as well, for the symptoms of incipient leprosy are as yet unknown to most of our medical practitioners. Furthermore, more than 90 per cent of those affected with the disease belong to the ignorant illiterate classes, so that more direct propaganda by means of demonstration and talks in towns and barrios within the infected areas has to be done. Besides being taught the signs of early leprosy, the confidence of the people must be won so that they will not hesitate in presenting themselves. It is evident that in order to undertake the work, a considerable amount of money in addition to the large sums now being spent at Culion and San Lazaro will be necessary.

In the Philippines, our knowledge regarding the early symptoms of leprosy was acquired through the study of the first lesions noted in children born at Culion of leper parents, who

subsequently developed the disease. Of the 388 surviving children born in the Colony up to the end of 1924, 70 had become confined lepers. It has been the good fortune of the doctors there to observe some of these lesions from the time they were first noticed to the stage when the presence of the germs was confirmed by bacteriological examination. Independently, Doctor Muir of Calcutta also made similar studies among adults in India.

In June, 1926, a preliminary survey was made in Cebu, which is the main focus of the disease in the Philippines to determine, firstly, whether such early lesions were also found among adults in the Islands, and, secondly, whether these incipient cases were numerous enough to warrant the taking of special measures to deal with them properly. It was shown in this survey that similar early lesions are indeed exhibited also by Filipino adults, and that persons presenting characteristic symptoms were fairly numerous in the capital of the province. It was also discovered that these lesions were already known to the people of Cebu, specially among the older generation.

Even before this survey was undertaken, however, the desirability of modifying and liberalizing the present methods of leprosy control was already being considered by the authorities. The proposed changes were designed to do away with the occultation of cases and to make the period of segregation less objectionable to those who have to be hospitalized. To this end in view, it was proposed (1) to treat unsegregated incipient cases in outdoor dispensaries, (2) to keep bacteriologically positive and, therefore, dangerous cases in regional treatment stations, and (3) to reserve Culion for advanced cases. It was the consensus of opinion that if it were possible to fully adopt these measures, our leprosy problem would be reduced to an insignificant matter in 15 years.

At the same time, it was realized that these modifications could not then be adopted due to lack of funds.

The result of the Cebu survey was so encouraging that in spite of the lack of money, a modest start was made in June of last year in the City of Cebu. After a month's hard struggle, the Provincial Board of Cebu, recognizing the value of the work, set aside ₱500 to start it. Six months later a bigger amount—₱5,000—was appropriated by the same body to support the undertaking during the present year. The work has been going on, therefore, for almost one year. It has been proved that leprosy is still very prevalent in Cebu and that although the



situation is not as bad as formerly, the disease, under previously existing conditions, can not be expected to disappear from the province for many decades to come. With the introduction of proposed modifications, however, we are confident that leprosy can be stamped out from the Province of Cebu in 15 years.

In connection with the work in Cebu, it has been necessary to stress the treatment of skin diseases, confirming experience abroad. It is probably significant that skin diseases of all sorts are so prevalent in this province. A skin dispensary has been improvised; the attendance there has been encouraging from the start and is still increasing from month to month. Many incipient cases of leprosy have been discovered among those consulting for miscellaneous skin diseases. The campaign against these diseases has also served to attract the attention and support of officials as well as of the public.

So far 155 incipient lepers have been discovered and it is believed many more are to be found throughout the province. The above number does not include about 150 persons who are voluntarily receiving prophylactic injections because they have previously been in contact with lepers.

The detention camp at Cebu, which has been converted into the local regional station, is in very poor shape and the buildings are in ruins. The donation of Mrs. Eversly Child of \$360,000.00 for a treatment station in this province, has therefore been most timely and will be a big help in the realization of the plans already outlined above.

Money will be needed to run the station donated by Mr. Childs, as well as to establish skin dispensaries in some of the most important municipalities of Cebu and to undertake the intensive educational propaganda necessary for the success of our plans. Furthermore, it is also necessary to build five smaller treatment stations at strategic points throughout the Philippines so that an additional appropriation will have to be asked from the Legislature next year.

As more and more patients will be retained at the treatment stations and less sent to Culion, a gradual shifting of the leper population from the latter to the former will be brought about and eventually it will be possible to divert part of the Culion appropriation to these stations. But at the outset, the Government will have to provide additional funds for building the five treatment stations and for running them for four or five more years, or until the reapportionment of the Culion funds will be made feasible. It is the general opinion, however, that this

additional outlay will prove to be a sound investment as it will lead to the eventual saving of large sums of money, as the end of the continuous drain from the coffers of the Government for the control of leprosy will be in sight.

The diagnosis of incipient leprosy does not offer any unusual difficulties. Nurses can be so trained that, in two months, they have no difficulty in recognizing the typical lesions. Once, we demonstrated a case to a committee composed chiefly of ladies, and a few days later, one of those present referred a niece to us, with the characteristic signs. As has already been mentioned, many of the Cebu people are familiar with these lesions.

The early symptoms of leprosy can not be fully described in this short article. The characteristic signs consist of pale or reddish macules or spots which almost invariably show some disturbance of cutaneous sensibility. The patient is unable to feel the prick of a pin and is incapable of recognizing hot or cold objects placed against this spot. The appearance of the lesions may be preceded or accompanied by numbness or pain felt in the affected member. Occasionally the first lesion may consist of a generalized rash similar to hives (*urticaria*).

We are often asked how is it possible to diagnose the disease when the germs can not be shown in the skin lesions by the usual bacteriological examination. The manner with which the germs gain foothold in the body has not been fully worked out, but so far as is known, the important steps in the process are as follows: Although other means of ingress are possible, the usual portal of entry is some cut or abrasion in the skin. Once inside the skin, the germs do not remain at the site for long. It has been proven that leprosy germs show an inexplicable affinity towards certain tissues, notably nerves and lymphatic vessels. After a while, the bacilli will be found almost exclusively in the nerves and along the lymphatic vessels up to the first set of regional lymphatic glands. In these tissues, the germs are immured or imprisoned, as it were, in connective tissue capsules. In the average case, this condition of latency is maintained for a long time, averaging in our cases about four years. If for some reason or other the resistance of the patient is diminished as by chronic illness, such as malaria, syphilis, hook-worm, or intemperate habits, the germs gain upperhand and multiply rapidly. They break through the capsules, invade the surrounding tissues, and gain the blood circulation. The result is the ordinary positive case in which the germs can easily be shown in the cutaneous lesions and often also in the sputum of

the nose. Then the patient becomes a menace to the community. At present, the best way to dealing with these dangerous cases is to segregate them in leper hospitals and our laws impose such segregation. On the other hand, the incipient case need not be segregated.

As the germs ascend up the nerves, they irritate the nerve fibers and give rise to such symptoms as pain, numbness, pricking and prickling sensations, etc. After the germs became encapsulated in the nerves, they produce death of the fibers by pressure and give rise to diminution or absence of the cutaneous sensibility, changes in the pigment of the skin, and atrophy of some muscles. It is seen that the early cutaneous lesions are produced indirectly by the germs through their effects in the nerves, and not due to their presence in the skin.

If such lesions are examined bacteriologically by the ordinary methods of scrapping or nipping the skin, the germs can not be demonstrated because they are high up the nerves and in the lymphatic glands. Since the germs are imprisoned deep in these tissues, they can not come out, and it is for this reason that such incipient may be considered, for all practical purposes, non-infectious.

Now if the body resistance of the patient is built up by a suitable food, proper exercise, and right methods of living, the germs may eventually be killed off even without drug treatment, and the only remaining signs to show that the patient had had the disease is an insensible area of the skin or some atrophy of the muscles of the hands or fingers. If anti-leprotic drugs are used, a definite cure may be assured in the vast majority of cases.

It is therefore important to diagnose the disease as early as possible and the treatment may be instituted at once. In the incipient stage, leprosy is much more easily cured than many other skin diseases. Any person who shows any of the symptoms described above is advised to consult with an officer of the Philippine Health Service. Such a step may save him many difficulties and lots of suffering later, all the more pitiable because so unnecessary.

PHILIPPINE HEALTH SERVICE

MANILA, July 18, 1928

*Memorandum for:*

*Subject:*

**ALL HEALTH OFFICERS, PHILIPPINE HEALTH SERVICE  
SCIENTIFIC ARTICLES FOR THE ANNUAL CON-  
VENTION, PHILIPPINE ISLANDS MEDICAL  
ASSOCIATION**

1. It is needless to say that the administrative function of the Philippine Health Service should be based on the newer and more modern knowledge of hygiene and public health as well as those of general medicine. In order to show that the medical officers of the Service are possessed and are up-to-date with these necessary "equipments" for a successful public health administration, it would be desirable that each and everyone should endeavor to pursue a special study on any particular branch or subject that he or she may feel interested in and to write down their observations in the form of a paper or scientific article.

2. If such papers are ready and the authors would like to have them read in the next annual convention of the Philippine Islands Medical Association, which will be held in December, 1928 it is requested that they (the authors) advise ahead of time Dr. R. G. Padua, at the Central Office of this Service, of the titles or topics of the papers so that the same would be included in the program. The final program will be fixed up sometime in November and it is desired that the topics and *copies of the articles* be submitted to this office *not later* than October 31, 1928.

JACOBO FAJARDO

*Director of Health*

## MOSQUITO AND DISEASES

Disease-bearing mosquitoes fall into three chief groups, namely: the *Culex*, the *Aedes* or *Stegomyia*, and the *Anopheles*.

Investigations conducted in the Philippines have shown that only a member of each of these groups is responsible for the transmission of a given disease, although there are many different species pertaining to each group. Take the *Culex* group for instance; of the many species known, only one has been incriminated as being responsible for the transmission of a disease known as *filariasis*. This species is called the *Culex Fatigans*. It carries the larvæ of a small worm which gets into a person's blood and there they thrive. When later in the development of the disease they block the lymphatics and produce enlargement of the extremities of the breast or a person's part, then it is known as elephantiasis. The *Culex* mosquito is found in all parts of the Philippines, because it breeds in all sorts of stagnant and filthy water, but fortunately, only very few persons in certain localities are affected with *filariasis* or elephantiasis. The *Culex* group of mosquito, therefore, is not much of a health hazard here, although it constitutes a nuisance, especially at night.

The United States Army Research Board in Manila, after a careful investigation conducted for several years, has definitely demonstrated that of the group *Aedes*, the species called *Aedes Egyptie*, is responsible for the transmission of dengue fever. This mosquito is no doubt familiar to all as a persistent day biter with stripped legs. It breeds in clean water, usually in artificial tanks, bamboo openings and tin cans. It is very fortunate that dengue fever is not much of a problem among Filipinos, for it appears that they acquire immunity against the disease early in life, but not so among Americans, in whom the disease present itself at times, in a very severe form. Among Filipinos it causes no permanent disability and hardly any death.

In the *Anopheles* group, we find the most important mosquito that transmit malaria. There have been recognized a total of about 15 species of *Anopheles* in the Philippines, but the work of the Rockefeller Foundation and the Philippine Health Service

has demonstrated that only one, the so-called *Anopheles minimus*, is responsible for the transmission of malaria here. This species breeds in the quiet sides of running mountain or hill streams and irrigation ditches and never in stagnant water. This mosquito is a very wild one, and, therefore, seldom found inside the houses. It probably bites late in the evening and this explains why in malaria districts, people do not complain usually of mosquitoes. This mosquito has never been found breeding in Manila. It explains why, inspite of the presence of mosquitoes here, there is a total absence of malaria. All the malaria cases in the city are among transients or residents coming from infested areas. Mosquitoes, however, are a nuisance. They should be killed wherever found.

## MISCELLANEOUS

---

### DANSALAN

On April 13 and 16, conferred with Provincial Governor Heffington and with the Provincial Commander Johnson re leper collection and vaccination against smallpox at Tamparan. No attempt was made to force the people to submit vaccination in view of the policy followed in this province regarding this matter.

The general health condition of the province is excellent. No epidemic of any kind in the district during the month.

### DAVAO

The general health condition of the province was satisfactory. General mortality was decreased as compared with the preceeding year. Malaria still maintains the highest rate of deaths among the list of communicable and other prevailing diseases, although it is decreasing.

### BATANES

The campaign against acute bronchitis, influenza, and varicella was one of the considered important work accomplished. All the measures corresponding to each disease were duly enforced.

The general health condition of this district was in normal condition.

### LINGAYEN

During this month yaws campaign has been intensified. Two clinically positive lepers were discovered at Santo Tomas, one of whom came from Alcala. These two lepers, including the one captured at Alcala, were conducted to San Lazaro Hospital by a district health officer on April 23, 1928.

### LA UNION

A careful study of the dysentery situation in the province and measure to avoid its presence is started. Malaria control is also applied not only at Rosario but also in the municipal districts of Pugo and Burgos.

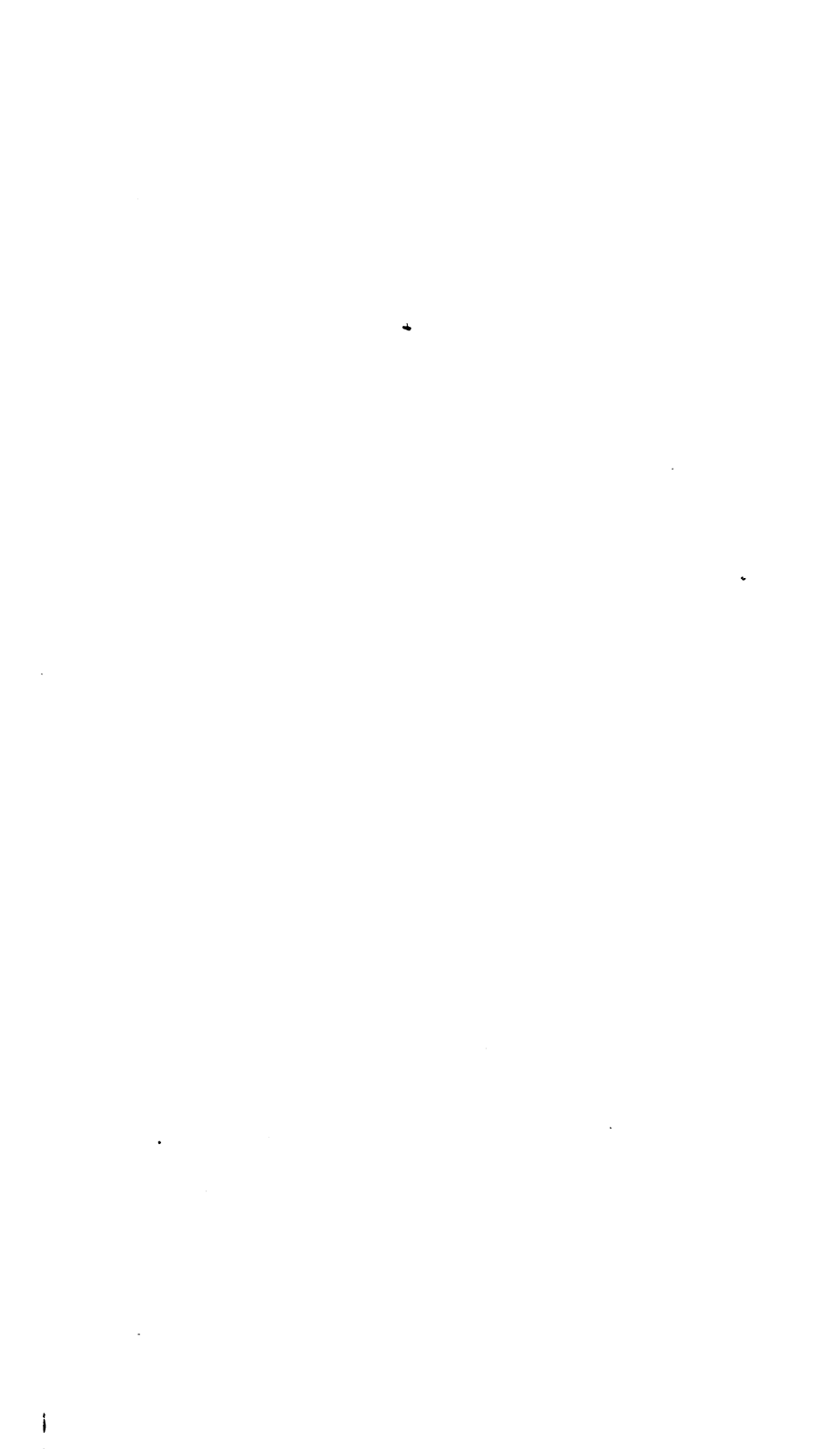
The general health condition of the district is good.

### SORSOGON

As a result of a campaign in apprehending lepers, seven lepers were caught during April, 1928, all of whom are now confined in Tahiran Island. On the 14th of April an examination was performed outside of the Roman Catholic cemetery as it was reported that human beings were buried in the place. As a result the bones of two children about six months old each were discovered and the authors of the crime were brought before the court.

### ILOCOS NORTE

Important activities accomplished are: (1) malaria survey of the municipalities of Vintar and Bangui conducted by the malaria control party sent by the Central Office; (2) apprehension of several lepers and their conduction to Manila thru the Health Service Ambulance; (3) sanitary supervision of fiestas of the different municipalities; (4) and the major operations performed in the hospital.





## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of April, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1928<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,184
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>321,522</b>

#### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
<b>Total.....</b>	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,347
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,937
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,663</b>
<b>Grand total.....</b>	<b>321,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, APRIL, 1928**

Date	Pres- sure mean <sup>1</sup>	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	759.47	27.8	34.8	4	22.5	5	29.6	30.1
11-20.....	57.96	27.5	35.1	20	20.6	19	29.7	30.2
21-30.....	59.10	28.9	35.4	28	23.0	26	30.6	31.0

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	71.7	74.7	6	68.3	10
11-20.....	69.1	74.7	13	63.3	18
21-30.....	73.8	79.5	23	69.6	30

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	E quad	1,721.5	227.0	8	48.5	6.4	4
21-20.....	SE quad	2,224.0	294.5	14	64.1	8.6	20
11-30.....	E quad	1,854.0	278.5	22	51.4	6.2	30

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	57 00	8 35	4	12.6	3
11-20.....	94 55	11 00	20	0.0	0
21-30.....	89 00	10 40	30	20.6	2

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	6	6	12	42.62
Filipinos.....	501	471	972	39.68
Spaniards.....	3	.....	3	18.68
Other Europeans.....	1	3	4	43.25
Chinese.....	38	38	76	51.82
All others.....	2	5	7	38.98
Total and average.....	551	523	1,074	40.29

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I, MEISIC:							
1. Tondo.....	145	109	254	6	6	12	266
2. San Nicolas.....	33	30	63	2	2	2	65
3. Binondo.....	16	29	45	2	1	3	48
Total.....	194	168	362	10	7	17	379
No. II, SAMPALOC:							
4. Santa Cruz.....	72	83	155	5	4	9	164
5. Quiapo.....	17	17	34	1	1	1	85
6. San Miguel.....	3	3	6	2	2	2	8
7. Sampaloc.....	82	87	169	9	2	11	180
Total.....	174	190	364	14	9	23	387
No. III, PACO:							
8. Port Area.....		1	1				1
9. Intramuros.....	30	31	61	1	1	2	63
10. Ermita.....	22	21	43	2		2	45
11. Malate.....	53	55	108	3	1	4	112
12. Paco.....	21	19	40	3	6	9	49
13. Pandacan.....	10	4	14				14
14. Santa Ana.....	13	7	20	1	3	4	24
Total.....	149	138	287	10	11	21	308
Grand total.....	517	496	1,013	34	27	61	1,074

Attended by physicians, living, 381; stillbirths, 32.

Attended by midwives, living, 80; stillbirths, 1.

Attended by families, living, 613; stillbirths, 27.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	6		6	23.31
Filipinos.....	333	275	608	24.82
Spaniards.....	1	1	2	12.45
Other Europeans.....				
Chinese.....	20	5	25	17.04
All others.....	1		1	5.57
Total and average.....	361	281	642	24.08

## NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA

## BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEISIC:</b>			
1. Tondo.....	107	88	195
2. San Nicolas.....	26	13	39
3. Binondo.....	14	10	24
<b>Total.....</b>	<b>147</b>	<b>111</b>	<b>258</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	59	47	106
5. Quiapo.....	16	7	23
6. San Miguel.....	10	6	16
7. Sampaloc.....	52	43	95
<b>Total.....</b>	<b>137</b>	<b>103</b>	<b>240</b>
<b>No. III, PACO:</b>			
8. Port Area.....			
9. Intramuros.....	7	8	15
10. Ermita.....	13	5	18
11. Malate.....	35	37	72
12. Paco.....	11	9	20
13. Pandacan.....	7	4	11
14. Santa Ana.....	4	4	8
<b>Total.....</b>	<b>77</b>	<b>67</b>	<b>144</b>
<b>Grand total.....</b>	<b>361</b>	<b>281</b>	<b>642</b>

NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	109	80
Divorced.....		
Widowed.....	35	77
Single.....	275	174
Conditions not stated.....	7	
<b>Total.....</b>	<b>426</b>	<b>331</b>
<b>Grand total.....</b>	<b>757</b>	

Stillbirths, 60.

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	110	82	7	7	206
1 year plus.....	39	24	1	4	68
2 years plus.....	15	11	1	2	29
3 years plus.....	8	5			13
4 years plus.....	7	1		1	9
5 to 9 years.....	7	7	3	4	21
10 to 14 years.....	7	4	2	3	16
15 to 19 years.....	14	9	3	1	27
20 to 24 years.....	30	14	10	4	58
25 to 29 years.....	13	9	8	1	31
30 to 34 years.....	10	7	3	4	24
35 to 39 years.....	12	9	6	6	33
40 to 44 years.....	7	10	6	1	24
45 to 49 years.....	9	14	3	4	30
50 to 54 years.....	9	13	4	2	28
55 to 59 years.....	20	10	4	1	35
60 to 64 years.....	9	4	1	2	16
65 to 69 years.....	7	5			12
70 to 74 years.....	12	10		2	24
75 to 79 years.....	3	8	1		12
80 to 84 years.....	6	10	1	1	18
85 to 89 years.....	2	8	1		6
90 to 94 years.....	3	4			7
95 to 99 years.....	1	7			8
100 years and over.....	1	1			2
Age not stated.....					
Total.....	361	281	65	50	757

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

[Stillbirths not included]

International numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....			4	3									
7	Malaria:													
10	a. Malarial fever.....			1						1		1		3
11	Measles.....			1										1
16	Diphtheria.....			1	1									2
23	Influenza:													
24	b. Without pulmonary complications specified.....			1	1					2				4
27	Dysentery:													
28	a. Amebic.....			2										2
29	b. Bacillary.....			4										4
31	c. Unspecified or due to other causes.....			3	3									6
32	Erysipelas.....			1	1									2
33	Lethargic encephalitis.....													1
37	Meningococcus meningitis.....	1												1
38	Anthrax.....				1									1
41	Tetanus:													
43-49	a. Umbilical.....			3	3									6
44	b. Others.....			1	2					1				4
45	Tuberculosis of the respiratory system.....			67	62					5	1			135
46	Tuberculosis of the meninges and central nervous system.....			3	3									6
47	Tuberculosis of the intestines and peritoneum.....			2	2					1				5
48-49	Disseminated tuberculosis:													
50	a. Acute.....			2	1									3
51	b. Chronic or unspecified.....			1										1
52	Syphilis.....									1				1
53-59	Purulent infection, septicemia.....													
60	<i>II. General diseases not included in Class I</i>													
61	Cancer and other malignant tumors of the buccal cavity.....			1										1
62	Cancer and other malignant tumors of the stomach, liver.....	1			3									4
63	Cancer and other malignant tumors of the female genital organs.....													1



**NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA--Continued**

**[Stillbirths not included]**

[illegible]









## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International numbers revision (of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
164—														
164	Senility.....			1	1									2
165-203														
	XIII. Old age													
	XIV. External causes													
171	Suicide by cutting or piercing instruments.													1
173	Accidental burns (conflagration excepted).....				1									1
183	Accidental traumatism by firearms (wounds of war excepted)				1									1
185	Accidental traumatism by fall.....			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):			2										2
	c. Automobile accidents.....			2										2
	f. Injuries by other vehicles.....			1										1
204-205														
	XV. Ill-defined diseases													
205	Cause of death not specified or ill defined:													
	a. Ill defined.....			1										1
	Total.....	1		61	49					3		1		115
	Grand total.....	1		110						3		1		115

## Causes of death

[illegible]

Causes of death	Age at death under 1 year																						Total under 1 year		
	1 month +		2 months +		3 months +		4 months +		5 months +		6 months +		7 months +		8 months +		9 months +		10 months +		11 months +				
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
All causes.....	14	6	6	6	6	6	11	9	7	7	8	3	7	5	6	4	5	3	8	6	4	1	1	76	56
COMMUNICABLE DISEASES:																									
Typhoid and paratyphoid fever (1)																									
Smallpox (6).....																									
Measles (7).....																									
Whooping-cough (9)																									
Diphtheria (10)																									
Influenza (11)																									
Asiatic cholera (14)														1											
Dysentery (16)																1									
Meningococcus meningitis (24)																									
Other epidemic and endemic diseases (25)																									
Tetanus (29)		1																							
Other infectious diseases (1-42)¹												1													
Beriberi (55).....	7	2	1				1	2	2	1	1				1									11	7
Diseases of the nervous system (70; 71; 80; 85)							1	1	1				1				1							3	2
Respiratory diseases (99; 100; 101; 107)	4		3	4	1	3	7	1	5	2	3	3	2	2	4	7	4	1						37	27
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....		1	1				5	1	4					1	2		2	2	1	1	2	1		16	8
Congenital malformation (169)																								1	1
Early infancy (160; 161; 162; 163)	1	2					1	1							1	1								3	3
All other causes (43-205)¹	2		1	1					2	1	1	1						1						5	5

<sup>1</sup> Other than those specified above.

**NOTE.**—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	21,180
Number of rats caught by spring traps.....	2,766
Number of cage wire traps set.....	504
Number of rats caught by cage wire traps.....	0
Number and kind of baits (coconuts).....	22,200
Number of poison portions placed.....	21,309
Number of rats found poisoned.....	360
Number of rats killed by clubs and other weapons.....	1,223
Number of rats found dead from other causes.....	515
Total number of rats otherwise caught, found dead or killed.....	4,864
Total number of rats sent to the laboratory for examination.....	4,864
Total number of rats found positive for plague.....	0

---

## TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF APRIL, 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female		Cases	Deaths	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths					
I.	No. 1.....	3		2	1			1		3		2	1	5	1
II.	No. 2.....	1		1		1	1			2	1	1		3	1
	No. 3.....			1								1		1	
	No. 4.....	2		1						2		1		3	
	No. 5.....	1								1				1	
III.	No. 6.....			1										1	
	No. 7.....	2		2								1		1	
	No. 8.....									2	2			4	
	No. 9.....	1	1					1	1	1	1	1	1	2	2
IV.	No. 10.....	2		1						2		1	1	3	1
	No. 11.....		1	1								1		1	
	No. 12.....													1	
	No. 13.....	1	1					1				1		1	
	No. 14.....									1	1			1	1
	Grand total .....	13	3	10	2	1	1	2	1	14	4	12	3	26	7

## REMARKS:

Cases confined as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Typhoid carrier—None

26

0

0

0

8

0

0

18

19

7



DYSENTERIES REPORTED DURING THE MONTH OF APRIL, 1928, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
No. 1.....	2	1	1	.....	3	3	1	1	5	4	2	1	7	5
No. 2.....	1	1	.....	.....	1	1	.....	.....	2	2	.....	.....	2	2
No. 3.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 4.....	.....	1	.....	.....	1	1	1	1	1	2	1	1	2	3
No. 5.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 6.....	.....	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	1	1
No. 7.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 9.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 10.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 11.....	.....	.....	.....	.....	1	1	.....	.....	1	1	.....	.....	1	1
No. 12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....	3	3	2	1	6	6	2	2	9	9	4	3	13	12

## REMARKS:

Amoebic dysentery.....

Bacillary dysentery.....

Unspecified.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Cholera carrier—None

2

4

7

9

5

**CHOLERA REPORTED DURING THE MONTH OF APRIL, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.	No. 1.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 2.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 3.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 4.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
II.	No. 5.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 6.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 8.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 9.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
III.	No. 10.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 11.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 12.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 13.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....														.....

REMARKS:  
 Nonresident case was reported during the month.  
 Cholera carrier—8

DIPHTHERIA REPORTED DURING THE MONTH OF APRIL 1928, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female		Cases	Deaths	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths					
I.	No. 1.	1								1			1		
	No. 2.	1								1			1		
	No. 3.														
	No. 4.	1		1					1		1		2	1	
II.	No. 5.														
	No. 6.														
	No. 7.	1		1					1		1		2	1	
	No. 8.														
III.	No. 9.														
	No. 10.														
	No. 11.														
	No. 12.			1						1		1	1		
	No. 13.	1													
	No. 14.														
Grand total.		5	1	3	1					5	1	3	1	8	2

## REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—5

5

1

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF APRIL, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria	17	7	3	
Varicella	9	8		
Varioloid				
Smallpox				
Measles	7	9	1	
Whooping cough				
Influenza	12	4	3	1
Bubonic plague				
Encephalitis lethargica	1		1	
Meningitis cerebrospinal epidemic	1		1	
Tuberculosis of the respiratory system	143	147	72	63
Tuberculosis of the other organs	10	8	9	6
Beriberi, infantile	14	9	14	9
Beriberi, adults		2		2

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria	11	2	2	1
Varicella		2		
Varioloid				
Smallpox				
Measles				
Whooping cough				
Influenza	1			
Bubonic plague				
Encephalitis lethargica				
Meningitis cerebrospinal epidemic				
Tuberculosis of the respiratory system	33	30	8	6
Tuberculosis of the other organs		1		1
Beriberi, infantile	1	1	1	1
Beriberi, adults				

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES FOR THE  
MONTH OF APRIL, 1928**

Sera and vaccines	On hand April 1, 1928	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of the month
Anti-diphtheric serum (tubes)	187	100	287	137	150
Anti-dysenteric serum (ampoules)	153	400	553	550	3
Anti-tetanic serum (units)	300,000	500,000	800,000	500,000	300,000
Cholera vaccine (c.c.)	4,200	30,000	34,200	28,200	6,000
Dried vaccine virus (units)	44,350	100,000	144,350	119,550	24,800
Dysenteric vaccine (c.c.)	18,120	60,000	78,120	59,160	18,960
Fresh vaccine virus (units)	134,700	200,000	334,700	156,200	178,500
Mixed typhoid-cholera vaccine (c.c.)	110,640	180,000	290,640	144,900	145,740
Typhoid vaccine (c.c.)	11,220	6,000	17,220	9,900	7,320

Health districts	Municipal districts	Vaccinations			Inspections of persons vaccinated					
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over	
			Never	Successfully	Unsuccessful	Positive	Negative	Positive	Negative	Total
No. 1.....	Tondo.....	457	224	20	213	256	139	21	3	278
	San Nicolas.....	170	103	15	52	41	41	9	.....	61
	Binondo.....	1,097	97	933	67	53	86	11	1	64
	Santa Cruz.....	948	181	657	110	146	95	28	2	512
No. 2.....	Quiapo.....	103	57	7	39	26	37	12	.....	38
	San Miguel.....	49	38	1	10	13	10	4	.....	17
	Sampaloc.....	300	174	29	97	169	88	8	1	178
	Port Area.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 3.....	Intramuros.....	180	82	61	37	27	22	2	.....	30
	Ermita.....	59	36	.....	23	44	29	2	1	48
	Malate.....	114	69	.....	41	23	14	4	1	28
	Paco.....	310	55	215	40	81	40	7	3	44
	Pandacan.....	118	44	47	27	18	23	3	1	24
	Santa Ana.....	42	26	.....	16	14	6	1	.....	16
	Grand total.....	3,947	1,186	1,989	772	872	630	112	15	1,338
										49
										694

## VACCINE VIRUS:

Remaining from last month.....  
 Received during the month.....  
 Used during the month.....  
 Remaining for next month.....

5,465 units  
 7,280 units  
 5,045 units  
 7,700 units

Total.....  
 12,745 units 12,745 units

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF APRIL, 1928**

Health districts	Municipal districts	Number of injections made in—				Total number of injections	
		Adults		Children		First	Second
		First injections	Second injections	First injections	Second injections		
No. 1.	Tondo.....	303	235	348	241	651	476
	San Nicolas.....	8	7	1	.....	9	7
	Binondo.....	.....	.....	.....	.....	.....	.....
	Santa Cruz.....	14	6	13	14	27	20
No. 2.	Quisno.....	6	4	7	6	12	10
	San Miguel.....	.....	.....	.....	.....	.....	.....
	Sampaloc.....	.....	3	.....	.....	.....	3
	Port Area.....	.....	.....	.....	.....	.....	.....
No. 3.	Intramuros.....	.....	.....	.....	.....	.....	.....
	Ermita.....	.....	.....	.....	.....	.....	.....
	Malate.....	.....	.....	.....	.....	.....	.....
	Paco.....	.....	.....	.....	.....	.....	.....
	Pandacan.....	.....	.....	.....	.....	.....	.....
	Santa Ana.....	.....	.....	.....	.....	.....	.....
	Total.....	330	255	369	261	699	516

Health districts	Municipal districts	Number of injections made in—												Total number of injections					
		Adults						Children											
		First injections		Second injections		Third injections		First injections		Second injections		Third injections							
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1.....	{ Tondo..... San Nicolas..... Binondo.....	837	.....	772	.....	605	.....	216	.....	442	.....	463	.....	1,053	.....	1,214	.....	1,068	.....
		714	.....	550	.....	303	.....	509	.....	380	.....	216	.....	1,223	.....	930	.....	519	.....
		623	.....	416	.....	305	.....	450	.....	276	.....	218	.....	1,073	.....	692	.....	523	.....
No. 2.....	{ Santa Cruz..... Quiapo..... San Miguel..... Sampaloc.....	735	.....	612	.....	780	.....	316	.....	408	.....	410	.....	1,051	.....	1,020	.....	1,190	.....
		409	.....	201	.....	50	.....	260	.....	111	.....	18	.....	669	.....	312	.....	68	.....
		313	.....	150	.....	46	.....	186	.....	61	.....	23	.....	499	.....	211	.....	69	.....
		699	.....	510	.....	400	.....	334	.....	280	.....	210	.....	1,033	.....	790	.....	610	.....
No. 3.....	{ Port Area..... Intramuros..... Ermita..... Malate..... Paco..... Pandacan..... Santa Ana.....	315	.....	301	.....	253	.....	98	.....	50	.....	36	.....	413	.....	351	.....	289	.....
		25	.....	19	.....	9	.....	12	.....	8	.....	3	.....	37	.....	27	.....	12	.....
		802	.....	736	.....	734	.....	316	.....	471	.....	310	.....	1,118	.....	1,207	.....	1,044	.....
		386	.....	297	.....	148	.....	205	.....	128	.....	96	.....	591	.....	425	.....	244	.....
		308	.....	190	.....	308	.....	34	.....	70	.....	63	.....	242	.....	260	.....	371	.....
		313	.....	188	.....	93	.....	103	.....	86	.....	52	.....	416	.....	274	.....	145	.....
		304	.....	213	.....	105	.....	116	.....	109	.....	58	.....	420	.....	322	.....	163	.....
Total.....	6,683	.....	5,155	.....	4,139	.....	3,155	.....	2,880	.....	2,176	.....	9,838	.....	8,035	.....	6,315	.....	

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.  
Typhoid and paratyphoid vaccine used for the third injections.

V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccinations	Previously vaccinated		
		Never	Successfully	Unsuccessfully
Abra.....	4,008	653	1,232	2,123
Agusan.....	1,359	352	480	527
Albay.....	12,756	3,827	2,487	6,442
Antique.....	7,523	2,392	3,156	1,975
Bataan.....	4,578	1,906	683	1,989
Batanes.....				
Batangas.....	17,310	5,589	4,452	7,269
Bohol.....	19,348	6,380	5,345	7,623
Bukidnon.....	2,789	1,076	357	1,356
Bulacan.....	11,410	4,432	3,419	3,559
Cagayan.....	33,378	6,786	21,788	4,804
Camarines Norte.....	2,922	960	668	1,294
Camarines Sur.....	3,010	734	619	1,657
Capiz.....	10,324	2,963	3,686	3,675
Catanduanes.....	12,853	1,169	5,674	6,010
Cavite.....	34,475	2,061	2,152	3,262
Cebu.....	27,986	8,484	4,303	15,199
Cotabato.....	9,175	2,732	2,846	3,597
Davao.....	8,542	4,052	2,516	1,974
Ilocos Norte.....	40,792	2,944	30,223	7,625
Ilocos Sur.....	9,694	2,386	1,671	5,637
Iloilo.....	34,641	9,943	19,367	5,331
Isabela.....	5,841	1,353	1,045	3,443
Laguna.....	42,007	4,390	34,017	3,600
Lanao.....	8,378	3,559	3,083	1,736
La Union.....	8,220	1,828	336	6,056
Leyte.....	36,648	10,759	13,926	11,963
Marinduque.....	2,419	534	1,374	511
Masbate.....	25,979	3,046	17,753	5,180
Mindoro.....	1,618	433	342	843
Misamis.....	10,480	3,278	873	6,329
Mountain Province.....	9,474	1,371	3,586	4,517
Nueva Ecija.....	13,250	5,123	1,676	6,451
Nueva Vizcaya.....	1,822	435	266	1,121
Occidental Negros.....	33,650	11,941	13,282	8,427
Oriental Negros.....	11,802	3,952	2,424	5,426
Palawan.....	213	69	66	78
Pampanga.....	11,092	4,345	775	5,972
Pangasinan.....	26,132	8,563	4,902	12,667
Rizal.....	12,745	3,712	5,793	3,240
Romblon.....	3,279	963	966	1,350
Samar.....	14,504	2,938	3,702	7,864
Sorsogon.....	6,696	1,664	93	4,939
Sulu.....	5,202	2,813	161	2,228
Surigao.....	641	263	94	284
Tarlac.....	11,366	3,131	5,720	2,515
Tayabas.....	11,693	5,516	1,724	4,453
Zambales.....	3,173	1,004	383	1,786
Zamboanga.....	3,549	1,694	492	1,363
Total.....	630,746	160,498	262,978	207,270

<sup>1</sup> Incomplete; reports from other provinces not yet received.

NOTE.—Vaccinations performed by vaccinating parties are included in the above table.



**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1928—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	370	165	702	524	610	1,166	1,682	1,855
Agusan.....	49	60	132	214	311	153	492	427
Albay.....	1,989	804	1,809	666	1,734	1,344	5,532	2,814
Antique.....	825	255	940	471	899	962	2,665	1,588
Bataan.....	1,243	188	1,275	414	537	237	3,055	839
Batanes.....								
Batangas.....	2,728	606	3,900	1,728	2,670	2,711	9,298	5,045
Bohol.....	2,141	956	3,091	1,673	4,589	4,339	9,821	6,968
Bukidnon.....	90	77	144	290	530	765	764	1,182
Bulacan.....	2,665	735	2,216	1,110	1,762	1,465	6,643	3,310
Cagayan.....	2,117	409	3,278	1,228	6,492	10,217	11,887	11,854
Camarines Norte.....	547	135	874	239	452	184	1,873	558
Camarines Sur.....	453	153	592	169	893	423	1,988	745
Capiz.....	1,032	210	1,201	523	3,169	1,540	5,402	2,273
Catanduanes.....	750	394	1,308	478	2,323	2,343	4,381	3,215
Cavite.....	1,237	376	1,960	1,569	7,281	11,136	10,478	13,081
Cebu.....	2,793	1,089	3,324	1,569	3,535	4,253	9,652	6,911
Cotabato.....	293	183	620	413	1,724	1,284	2,637	1,880
Davao.....	339	119	798	340	2,629	1,812	3,766	2,271
Ilocos Norte.....	1,801	803	5,048	2,216	15,522	12,436	22,871	15,535
Ilocos Sur.....	1,120	547	1,789	950	1,921	1,593	4,830	3,090
Iloilo.....	2,340	559	4,487	1,499	7,505	10,233	14,332	12,291
Isabela.....	838	280	893	338	1,604	921	3,335	1,539
Laguna.....	1,225	415	2,226	1,703	8,299	14,454	11,750	16,572
Lanao.....	236	212	517	509	1,312	1,759	2,065	2,480
La Union.....	1,094	508	1,439	1,329	1,000	1,719	3,533	3,556
Leyte.....	1,452	436	5,379	1,312	10,561	5,705	17,392	7,453
Marinduque.....	322	101	132	54	254	870	708	1,025
Masbate.....	628	99	2,217	540	8,269	4,624	11,114	5,263
Mindoro.....	157	43	131	49	464	385	752	477
Misamis.....	642	326	1,050	537	1,819	1,221	3,511	2,084
Mountain Province.....	129	33	559	259	1,543	1,319	2,231	1,611
Nueva Ecija.....	1,788	761	3,179	1,366	2,114	2,033	7,081	4,160
Nueva Vizcaya.....	297	123	114	107	398	693	809	923
Occidental Negros.....	2,618	581	5,165	1,444	7,464	6,315	15,247	8,340
Oriental Negros.....	1,615	473	2,246	990	2,314	1,391	6,175	2,854
Palawan.....	1	1	3	2	159	18	163	21
Pampanga.....	1,425	652	962	473	366	551	2,753	1,676
Pangasinan.....	4,618	720	5,496	1,319	5,353	4,071	15,467	6,110
Rizal.....	1,916	894	728	666	1,729	2,630	4,373	4,190
Romblon.....	451	188	512	170	735	409	1,698	767
Samar.....	700	314	1,417	887	2,762	2,231	4,879	3,432
Sorsogon.....	470	191	805	289	2,631	1,047	3,906	1,527
Sulu.....	256	144	838	457	963	735	2,057	1,336
Surigao.....	119	54	103	46	151	106	373	206
Tarlac.....	804	575	1,676	1,398	1,130	2,373	8,610	4,346
Tayabas.....	2,002	888	2,720	1,052	2,183	1,759	6,905	3,699
Zambales.....	250	274	438	571	430	668	1,118	1,513
Zamboanga.....	217	173	420	399	612	758	1,249	1,330
Total.....	53,193	18,362	80,853	36,549	133,707	131,361	267,753	186,272

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY 1928<sup>1</sup>**

Provinces	First injections	Second injections	Total
Abra.....	719	454	1,173
Albay.....	264	208	472
Bukidnon.....	379	185	564
Bulacan.....	206	106	312
Camarines Sur.....	2,034	905	2,939
Capiz.....	348	113	461
Laguna.....	356	173	529
La Union.....	60	31	91
Mindoro.....	103	1	104
Misamis.....	31	21	52
Mountain Province.....	521	369	890
Pampanga.....	639	78	717
Romblon.....	1,465	1,055	2,520
Tarlac.....	154	50	204
Tayabas.....	237	37	274
Total.....	7,516	3,786	11,302

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	354	118		472
Albay.....	6,018	1,496	86	7,600
Antique.....	2,057	1,217		3,274
Bataan.....	73			73
Batangas.....	142	210		352
Bulacan.....	28	690		718
Camarines Sur.....	3,901	52		3,953
Catanduanes.....	50			50
Iloilo.....	212	51		263
Laguna.....	107	105		212
Pampanga.....	299			299
Pangasinan.....	546	372		918
Rizal.....	14,661	4,252		18,913
Romblon.....	588	135		723
Tarlac.....	776	26		802
Total.....	29,812	8,724	86	38,622

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	15	13	19	47
Batangas.....	27	23		50
Bukidnon.....	145	72		217
Bulacan.....	445	454	58	957
Camarines Sur.....	36			36
Iloilo.....		120		120
Laguna.....	2,151	1,435	723	4,309
Mindoro.....	60	30		90
Pampanga.....	6	6		12
Pangasinan.....	153	99	38	290
Rizal.....	631	232	44	907
Tarlac.....	1,011	237	3	1,251
Total.....	4,680	2,721	885	8,286

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA)  
VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928 <sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	1,546	1,238		2,784
Agusan.....	2,069	1,088		3,157
Antique.....	1,205	344		1,549
Bataan.....	6,875	4,954		10,829
Batanes.....	428	394		822
Batangas.....	855	471		1,326
Bohol.....	724	678		1,402
Bukidnon.....	381	502		883
Bulacan.....	27	27		54
Cagayan.....	322	201		523
Camarines Norte.....	2,725	2,095		4,820
Camarines Sur.....	256	61		317
Capiz.....		101		101
Cebu.....	3,590	1,075		4,665
Cotabato.....	50			50
Davao.....	786	324		1,110
Ilocos Sur.....	486	305	46	837
Iloilo.....	5,300	2,331		7,631
Isabela.....	21	15		36
Laguna.....	455	347		802
Lanao.....	3,790	1,738		5,528
La Union.....	5,654	3,095		8,749
Marinduque.....	2,039	965		3,004
Mindoro.....	55			55
Misamis.....	1,576	480		2,056
Mountain Province.....	774	78		852
Nueva Ecija.....	1,087	1,118		2,205
Nueva Vizcaya.....	680	619		1,299
Occidental Negros.....	6,174	3,078		9,252
Oriental Negros.....	961	647		1,608
Pampanga.....	35,250	2,336		37,586
Pangasinan.....	6,110	4,117		10,227
Rizal.....	528	705		1,233
Sulu.....	30			30
Tarlac.....	1,773	1,121		2,894
Tayabas.....	1,879	1,210		3,089
Zamboanga.....	1,127	1,041		2,168
Zamboanga.....	1,080	438		1,518
Total.....	97,668	39,337	46	137,051

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF  
APRIL, 1928**

Province and town	Cases	Deaths
CAGAYAN:		
Abulug.....	2	0
Total.....	2	0

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF APRIL, 1928**

(No case and no death reported during the month)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF APRIL, 1928**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, April 1, 1928:</b>				
Minor.....	125	94	155	374
Sewer.....	25	49	4	78
Vacating.....	8	10	.....	18
Filling.....	25	36	22	83
<b>Total.....</b>	<b>183</b>	<b>189</b>	<b>181</b>	<b>553</b>
<b>Orders issued during the month:</b>				
Minor.....	.....	6	39	45
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	3	.....	3
<b>Total.....</b>	<b>.....</b>	<b>9</b>	<b>39</b>	<b>48</b>
<b>Orders completed during the month:</b>				
Minor.....	4	3	1	8
Sewer.....	.....	1	.....	1
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>9</b>
<b>Orders cancelled during the month:</b>				
Minor.....	.....	.....	.....	.....
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>
<b>Orders pending, April 30, 1928:</b>				
Minor.....	121	97	193	411
Sewer.....	25	48	4	77
Vacating.....	8	10	.....	18
Filling.....	25	39	22	86
<b>Total.....</b>	<b>179</b>	<b>194</b>	<b>219</b>	<b>592</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	27	58	32	117
<b>Permits for minor building constructions:</b>				
Approved.....	49	47	28	124
Disapproved.....	9	6	5	20
<b>New buildings completed.....</b>	<b>12</b>	<b>17</b>	<b>17</b>	<b>46</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	23	26	19	68
Disapproved.....	12	4	4	20
<b>Prosecutions:</b>				
Convictions.....	.....	.....	.....	.....
Dismissals.....	1	1	.....	2
Amount of fines.....	.....	.....	.....	.....
<b>Plumbing permits issued.....</b>	<b>30</b>	<b>49</b>	<b>38</b>	<b>117</b>
<b>Plumbing projects completed.....</b>	<b>13</b>	<b>71</b>	<b>34</b>	<b>118</b>
<b>Premises connected to the sanitary sewer to March 31, 1928.</b>	<b>2,551</b>	<b>4,871</b>	<b>771</b>	<b>7,693</b>
<b>Connected during the month.....</b>	<b>5</b>	<b>9</b>	<b>6</b>	<b>20</b>
<b>Total.....</b>	<b>2,556</b>	<b>4,880</b>	<b>777</b>	<b>7,713</b>

**NOTE.**—Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

MAY, 1928

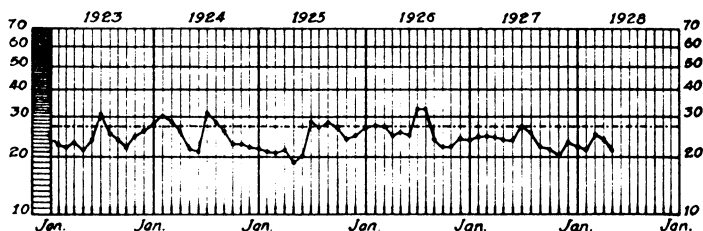
No. 5

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germes, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY of MANILA*



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
LEONCIO LOPEZ-RIZAL, M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Public Health Activities in the Philippines, by Dr. J. P. BANTUG....	223
Culion Thru Inmates' Eyes .....	231
Keeping the Body Healthy, by M. E. GRIFFIN.....	236
Building the Healthy Body, by W. E. GRIFFIN.....	240
Miscellaneous .....	244
General Statistics .....	247

222

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

MAY, 1928

No. 5

**PUBLIC HEALTH ACTIVITIES IN THE PHILIPPINES**

By J. P. BANTUG, M.D.

In any sketch portraying the development of public health in the Philippines, the fact should never be lost sight of that before the American occupation of the Islands, there was already an organization in the country, the primary object of which was the promotion of health and the prevention of disease for which measures accepted as of positive value by the scientific world were adopted. There was a Superior Board of Health which was an advisory body to the Office of General Inspection of Health and Charity and the Central Institute of Vaccination, the establishment of which in the Islands dates as far back as 1805. Maritime Health Quarantine was established at the principal ports. District health officers or *médicos titulares* were in charge of sanitation in the provinces, with a corps of vaccinators. There was also an office of Vital Statistics in Manila. Several hospitals and leprosaria were in operation. These works had been continued during the short-lived Philippine Republic, giving emphasis, as was to be expected to the medical and sanitary corps of the Army, with their physicians, pharmacists and assistants, and the effective coöperation of the Philippine Red Cross, the latter having branches in many municipalities.

This in brief is the history of the development of public health service in the country during the past régime and which has attained its almost complete development under the present administration. In order to have a comprehensive idea of the

actual health service in the country, it is necessary to divide what has already been accomplished into various stages, to wit: (1) period of organization, (2) campaign against epidemic diseases, (3) structural sanitation, (4) prophylactic inoculations, (5) scientific investigations, (6) industrial hygiene, and (7) publicity.

#### PERIOD OF ORGANIZATION

Hardly a few weeks had passed from the surrender of the City of Manila when a Local Board of Health was created, with Filipino participation since the beginning. Included among those whose services were solicited were Dr. Trinidad H. Pardo de Tavera and Dr. Ariston Bautista. Provincial boards of health were established as American influence gained foothold, having under their jurisdictions the old municipal boards of health, with a president who was a duly registered physician, a *cirujano ministrante*, or any other person qualified to discharge the duties of the position. The provincial, as well as the municipal boards of health underwent, changes as years went by, the first having been converted into sanitary districts and the second into municipal districts, and later in 1922 when Act 2156 was approved, these latter organizations were changed into sanitary divisions, which, a more stable fund, called the Health Fund, has made possible the rendition to the municipalities of a more efficient sanitary service, attracting into its fold at the same time, the best talents of the country.

At the beginning of 1926, there were in the Islands 46 district health officers, 7 assistant district health officers, 5 subdistrict health officers, 279 presidents of sanitary divisions, besides a considerable number of district nurses who work within their respective districts, either outside or inside of the dispensaries established one in each municipality and in all the important barrios. The provincial boards as well as the municipal councils, conscious of the increasing efficiency of the health organization, have never hesitated to increase their health funds from year to year to adequately meet the increasing needs of the community.

The City of Manila is divided into three sanitary districts, with a section of licenses, besides a disinfecting brigade, and a fly, rat, and mosquito brigade.

The present organization is partly territorial and partly scientific, and, in order to remedy this lack of unity, a new scientific plan of organization is being evolved. Defective tho the present



system may be, there must be something in it when a republic like that of Chile has taken it as a model for the reorganization of its public health administration.

For sometime past there have come to Manila a number of foreign visitors to study our system of organization and the complex activities to which we are dedicated. The encouraging results now obtaining in the treatment of lepers in Culion has drawn attention, the colony having been visited with a view to making a conscientious study of the treatment and administration by such men as Mr. William Danner, Secretary of the American Mission for the Lepers; Mr. Frank Oldrieve, Secretary of the British Empire Leprosy Relief Association; Dr. Robert M. Cochrane (British), Secretary to the Mission to Lepers; Dr. Ernest Muir, a world authority on leprosy; Dr. Clifford Bartlet, of the Department of Pathology of the Peking Union Medical School; Dr. Douglas of Rangoon, Burma; Dr. K. Mitsuda, Director of the Government Leper Asylum of Tokyo, Japan; Dr. C. H. Suloz-Araujo of the Instituto Oswaldo Cruz of Brazil, who had been travelling around the world, visiting asylums for lepers; Dr. James W. McKane, Superintendent of the Chengmai Leper Asylum of Siam; Dr. Bon Mak, who spent three or four months in the colony studying the organization and treatment of leprosy, in charge of a leper asylum in Bangkok, Siam; and Drs. W. W. Cadbury and Siegel, missionary physicians of Canton Christian College.

There is now Office of Public Health Nursing, the object of which is to partly remedy the insanitary conditions in the places where the poor live and to help to reduce infant mortality. During the first years of its existence the activities were confined to the care of mothers and children and house-to-house inspection, giving instructions on hygiene, sanitation, diet and pre-natal and postnatal hygiene. They also took care of indigent patients and those who had fallen ill through accidents in their own houses; helped in the registration of births of children under one year of age; vaccinated the children against small-pox, taught hygiene and sanitation to the mothers in their houses, reported cases of communicable diseases, and instructed midwives through lectures and demonstrations. There are at present employed in the City of Manila 19 trained nurses, including 1 superintendent and 2 supervisors, and 114 in the provinces, making a total of 133. Their activities are being gradually extended in the provinces.

## CAMPAIGN AGAINST EPIDEMIC DISEASES

The civil government was hardly established in the provinces when a dreadful epidemic of cholera broke out in March, 1902, devastating provinces and municipalities in its wake. Recourse was made to forced hospitalization of cases and isolation of all contacts, inter-municipal and inter-provincial quarantine and block disinfection of infected areas, in addition to a measure, which is even at this time, considered very drastic, the burning of shacks or cottages in the most insanitary districts, causing a real tragedy among the poor. These notwithstanding, the disease lasted nearly two years, leaving death and desolation, in its wake. Successive epidemics were put under a more complete control, and future epidemics of the extent of that of 1902 is no longer feared.

The problem of smallpox has constantly occupied the attention of the health authorities since the beginning, and notwithstanding the work undertaken during the past régime, in connection with the prophylaxis of the disease, it caused a great toll among children of tender years, and the anxiety of the parent recurred at every return of the hot season. To stamp out the disease a general systematic vaccination was inaugurated, and were lulled into security for some years, but through an incomprehensible relaxation in the organization a great epidemic occurred during the years 1918 and 1919.

Dysentery sometimes occurs as an epidemic during the rainy season, although fortunately it has never become extensive.

The cases of bubonic plague which were registered in Manila at the beginning of American occupation have not gained a foothold, thanks to the preventive measures employed.

The epidemic of influenza in 1918 caught everybody unaware, and up to this time we have not been able to thoroughly understand the factors that bring about its pandemic occurrence.

Much have been learned from this series of epidemics with regard to their manifestations, treatment, and prophylaxis, and with our present knowledge, with possible exception of influenza, their widespread reappearance would well nigh be impossible.

## STRUCTURAL SANITATION

As a decisive step towards general sanitation, there was established since the beginning of its organization a division of sanitary engineering in the Philippine Health Service, the primary duty of which is the supervision of the construction of new

buildings, securing for each, good light, adequate ventilation, and sanitary site, and that the plumbing is installed according to modern requirements. The supply of potable water, either by the gravity system or by tanks with pipes, is now becoming general in the provinces, constituting a real source in the maintenance of good health. Municipalities are being provided with good drainage and the sanitary disposal of garbage and rubbish is now practiced in progressive communities.

The Philippine Health Service has always tried to keep itself up with the progress of sanitary science elsewhere and the results of original investigations were adopted one after another, after a preliminary trial, such as vaccination against typhoid, cholera, and dysentery. Vaccination against rabies was the last adopted, but here the aim is to attack the disease at its origin or to immunize the dogs by which the disease is commonly transmitted to man.

#### SCIENTIFIC INVESTIGATIONS

The efficacy of the different drugs for certain disease has been investigated, and we now count with the most effective drugs against yaws, tropical ulcers, malaria, and leprosy. Thanks to the farsightedness of the Governor-General who took cognizance of the results obtained by the first Committee on Leprosy Investigation and the liberality of the Philippine Legislature, we are now marching towards a definite goal for the final solution of this old problem. It should be remembered in this connection that it was a Filipino, Dr. Eliodoro Mercado, who, with his scientific investigations, has awakened once more interest in the possibilities of the preparations of chaulmoogra oil in the treatment of leprosy. With the encouraging results obtained since the beginning of the experiment, it has been possible to ameliorate the conditions of those afflicted with the disease, who are subject to so drastic a measure as segregation and it has made possible the granting of conditional liberty to those found negative for a period of 6 months, instead of 2 years as has theretofore been the practice. Since May, 1920, about 800 have become negative as a result of the modern treatment of leprosy, and the Philippine Health Service has taken another step forward with the establishment of treatment stations in strategic points in the Archipelago. One is already functioning in Manila in the San Lazaro Hospital for the provinces of northern and central Luzon and another in Cebu for that prov-

ince and the neighboring ones and in the near future still others will be established. With this innovation, it is hoped that patients in the early stages of the disease will present themselves voluntarily for their isolation and treatment, while the patients in the non-infective period of the disease will be relegated to the out patient department. With this procedure, it is possible to attack the disease at its incipency without sacrificing individual liberty. In order to carry out this policy a number of physicians and nurses are being trained for the diagnosis and treatment of the diseases.

Taking into account that malaria is one of the most common diseases in the country, heading as it does our mortality figures, after that of tuberculosis, and considering the great number of persons in endemic places who lead a languishing life, unable to earn their livelihood with their labor because of this disease, the Philippine Health Service, with the coöperation of the Rockefeller Foundation, and the decided protection on the part of the Philippine Legislature, which has just set aside a special appropriation of ₱100,000, a section of malaria control with duly trained personnel and field laboratory outfits were created. As a first step, three units were formed for an intensive and systematic control work in the most endemic regions like Calauang in Laguna, San Jose in Mindoro, and Zamboanga in Zamboanga.

Among the scientific investigations which have been carried out are the different epidemiologic investigations of typhoid fever in the City of Manila and in the City of Baguio, the experiments on the prophylactic use of antityphoid and anticholera vaccine, and antidysenteric vaccinations; investigations of the conditions of truck gardens; the epidemiology of cholera; experiments on antidysenteric vaccine; investigations on beriberi; campaign against ancylostomiasis and intestinal parasites; study of the prophylaxis of filaria; survey on goiter and its prophylactic treatment; investigation on the prophylactic value of the extract of "dita"; determination of the splenic index in the provinces; campaigns against tropical ulcers; experiments on sodium and potassium bismutrate for the treatment of yaws; campaign against malaria in Novaliches, etc.

The policy of establishing hospitals and dispensaries was inaugurated in the then Department of Mindanao and Sulu way back in 1914, having constructed 8 of the former and a large number of dispensaries up to 1921, and these have been one of the principal factors in attracting the Mohammedans to live a

civilized and peaceful life. Aside from this, it has been demonstrated that a properly administered hospital is an indispensable complement to a sanitary organization, for the efficient treatment and isolation of the first cases of communicable diseases. It is also a factor in reducing the mortality of the locality. The cured patient, after leaving the hospital, is a graduate teacher in the sanitary care of the sick. At present the Philippine Health Service has under its jurisdiction 35 hospitals with a bed capacity of about 6,000.

#### INDUSTRIAL HYGIENE

As a corollary to all we have discoursed in the foregoing, a section of industrial hygiene was created in May, 1924, its activities consisting in the inspection of factories, investigation of hazards resulting from and diseases in the industries and the physical examination of laborers. The following have been the object of investigation in this connection: the cement factory of Cebu, the match factory of Santa Ana, the mirror factories, the hat factories and laundries, both hand and steam. It is also performing a general investigation in the different establishments like those of the tobacco and rope factories, printing establishments, marble works, machine shops, rice mills, fertilizer factories, silversmiths, and slipper and button factories. Defective construction in the factories have been corrected for the welfare of the laborers.

#### PUBLICITY

In order to obtain the loyal coöperation of the public it was necessary to create a medium through which adequate sanitary education could be disseminated. Through it the difficulties that may come up upon the establishment of whatever sanitary measure in the locality may be avoided. An educated community would not be a stumbling block to the sanitarian even if his work were in conflict with their private interests. Without the coöperation of the people, whatever work may be done would be useless, and would not give the success which is expected. By means of a systematic publicity the interest of the community can be aroused in such a way that sanitary measures will be more readily accepted. The Legislature which at the beginning was reluctant to give greater appropriations for the health service is now more liberal than ever, so that it can be stated that after the Bureau of Education the Health Service is the office

that has received more benefits. As a proof, we can cite the additional appropriation of ₱200,000 for the extension of hospital service in the provinces, the special appropriation of ₱100,000 for the campaign against malaria, the law entitled "Standardization of salaries of district health officers," which make them equal in so far as salaries are concerned, with the provincial fiscals, and the privilege of private practice for hospital physicians.

Much has been done but more is yet to be done. It is to be regretted, in the first place, that the scientific activities in the country are scattered among different departments and offices, such as the Public Welfare Commissioner under the Secretary of the Interior, the Bureau of Quarantine Service which functions under the Federal Government as an independent organization, the different boards of examiners, etc., etc. In order that better coördination and efficiency in the administration may be had, all the health, sanitary and public welfare activities in the country should function under a Department of Health with its corresponding secretary.

Such has been the part played by the health officers in the progress and well-being of the nation, and it is hoped that the time will come when a full time health officers, placed above competence by adequate remuneration, will render a still larger contribution for increased productivity, reduced suffering, and lengthening the span of human life.

## CULION THRU INMATES

Seldom is Culion placed in its proper light. Whatever comes from official sources is always looked upon by the laity as a one-sided view of the case, if from foreigners as a mere compliment because of courtesies received. It shall, therefore, be our endeavor to give some sidelights of Culion, as seen and felt by the patients themselves. The first of the series is by Mr. Tomas Gomez, Jr., one of the brightest young men, whose unusually keen mind, has not been affected by the disease.

### THE BRIGHT SIDE OF CULION

By TOMAS GOMEZ, Jr.

Culion has always been thought horrible. This belief has discouraged many lepers still living in their towns, who have been hiding as long as they can, instead of presenting themselves for treatment at the early stage of the disease. I am of the opinion that the present leprosy laws should be rearranged in order to adapt them to the present conditions of the lepers in the Philippines. I also wish to say that there must be a widespread propaganda about the conditions of treatment and also the conditions of life in the leper colonies of the Philippines, in order that everybody in the country should take care of their lepers and present them for treatment at the incipient stage. I maintain that, in order to succeed in the campaign for the eradication of leprosy in the Philippines, the lepers themselves must be heard in the attempt to find the best remedy for the situation.

But in justice to what the Government has done for the betterment of the conditions of the lepers in the Philippines, and as a help to those who are suffering from the disease and do not like to go to the leper colony for treatment because they think that Culion is something like "Dante's Inferno," I am going to describe Culion as it is now under the administration of Filipino physicians.

### THE COLONY PROPER

The Culion Leper Colony is a town similar to the municipality of Masbate in geographical position and general make-up, but due to the efforts of the Government to beautify the town,

the Colony proper is more beautiful than the summer resort of Antipolo. It is well dotted with good buildings made of first-class materials, many of them made of concrete cement. Among the many prominent buildings are: the colony hall, the public theater, the tenement houses, the general kitchen, the medical clinics, the general dispensary and the pharmacy, all of them made of concrete cement. We have also the *presidencia*, the emergency hospitals, the public-school building, the Excelsior Club and Library, the American quarters, the dormitories for women under the supervision of the Sisters of Charity and, some, under the control of the Evangelical Congregation.

The colony hall is supposed to be the Ayuntamiento building of the colony. It is there, where the cases pertaining to the administration of the colony are taken up before the chief. It is there where the representatives of the different regions discuss the affairs of their people. It is there, where we find the seat of the town magistrate for the proper administration of justice. It is there, also, where we find the superintendent of agriculture who acts as counsellor to the people and to the administration in matters pertaining to the natural resources of the Culion Leper Colony.

The tenement houses are destined for mature men and women, just as the dormitories are destined, as a general rule, for young and single Women. The *presidencia* is destined for the use of the administration in the execution of its police powers. It is there, where we find the municipal jail destined for the lepers violating the law. In the colony proper, there are also beautiful private houses, such as the residence of Representative Mariano, the residence of Mrs. Babuena, Mr. Cejas, Mr. F. A. Llamas, the confederated fishermen company, the evangelical dormitories for girls, and many others.

We have also in the colony the Roman Catholic Church and the Evangelical Congregation Chapel where the followers of Christ gather to pray with utmost devotion. We also have the big electrical plant organized by stocks controlled by persons living inside and outside of the colony. The company furnishes ice and electric light, both to the colony and to reservation of Balala, destined for doctors and nurses and other employees of the colony, not lepers.

#### THE GIFTS OF NATURE IN THE COLONY

Before reaching the Culion Leper Colony, I heard that there were no trees growing in Culion, but here is what I have seen



in the few days I have spent in the Colony until now. The colony is surrounded by "destinos," meaning agricultural reservations of both small and big areas according to the circumstances under which they are taken. There are no rice plantations in Culion, but there is a greater variety, and also a greater quantity of fruits there than in many provinces of the Philippine Islands. In their proper seasons, we find in the colony, specially in "destinos," a great abundance of pineapples, santol, mangoes, bananas, breadfruits, papayas, guavas, casoy, coconuts, atis, guyabanos, lemons, oranges, pomelos, and many others. There is also a wide field for fishery due to the abundance of fish in the waters around the reservation. It is due to this fact that the fish storage business of the Culion Ice Fish Company has been very successful. Many people also have succeeded in making money with the fishing business due to the great demand of fish on the part of the Government for their free distribution to the leper inhabitants of the colony.

Another gift of nature in the Culion Leper Colony is the abundance of beautiful flowers, specially the rosal and the ilang-ilang growing in private gardens and by the sides of the streets. In the private houses many people have roses in their gardens, violets, cadenas de amor, alejandrias, dama de noches, daisies, gallardías, lágrimas de amor, and escarlatas. With proper care many women of the colony have succeeded in producing even the everlasting of Baguio.

There is also a great abundance of lumber in the Culion Reservation, everything open to the necessities of the lepers in the colony, after proper authorization by the director. The Culion Reservation offers a good field for hunting wild boars, deers, wild chickens, and other wild animals.

#### ENTERTAINMENT IN CULION

There are many kinds of entertainments in Culion. There are very frequent cine shows offered free by the Government to the lepers. Every holiday, the lepers stage dramas, *zarzuelas*, and musical programs. Once in a while, there are contests between poets among the colonists, patterned after the *Balagtasan* system of the Tagalog regions. Sometimes there are games, such as indoor baseball, volley ball, ping-pong, and also track-and-field races. The public theater nicely built with concrete cement is at the disposal of the public for their programmes and entertainments. There is also a refreshment parlor at the right side of the concrete stairway, at the entrance to the theater.

## THE RELIGIOUS WORK

The most wonderful work done in Culion is the work of the missionaries and the work of the doctors and nurses. When the quarantine period is nearing its end, the missionaries from both the evangelical congregation and the Catholic church go to the quarantine houses to gather their flock in order to guide them in the pathway of life according to the teachings of the Divine Master. The males select the places where they can live. Only the minors among the males are taken by the missionaries in order to save them from corruption. The females are taken by the Sisters and placed in the dormitories of the "Hijas de María," where they are taken care of, like the "colegiales" of a modern Catholic college or dormitory. Under the supervision of the Sisters of Charity, the females are taught all kinds of manual work pertaining to the keeping of the home. They are taught how to cook their food, how to wash their clothes, and such other kinds of work that may enable them to live independently or to be helpful to their parents. Besides all these instruction on the routinary works of the home, if they so desire, they are also taught music, piano, embroidery, and all the duties of every follower of Christ. The females can take a stroll once in a while by groups and with the permission of the Mother Superior or the *encargada*. But if I were asked an opinion on the question, I can assure anybody that the female lepers are in safer hands in Culion under the Sisters of Charity, than in any other leprosarium of the Philippines. The Evangelical church also manages a dormitory where the female lepers of that congregation live.

The Jesuit fathers are also doing great work in flocking together the Christian souls in the Culion Roman Catholic church at the top of a hill, where the people after the mass gather, to take a view of the beautiful panorama along the sea and down the hill. Every Sunday two masses are offered in the Roman Catholic church and a very large number of Christian followers among males and females take their holy communion every Sunday.

The Evangelical church also holds services in their Chapel in Rizal Street. (The dead of both the Roman Catholic church and the Evangelical are buried in the cemetery of the colony under the control of the Government.) The Sisters of Charity also have the "Cinco Llagas" dormitories for mature women.

## THE MEDICAL WORK

As soon as the unfortunate leper begins to taste the kindness and skillful attention of doctors and nurses, he begins to realize that, under present conditions, he is treated better in Culion than in any other place for lepers in the Philippines. The lepers of Culion are properly distributed to the different clinics of the colony, so that they may receive proper medical attention. In the clinics they are given both intradermal at the site of the lesions and intramuscular injections of Wightiana Ethyl Esters with iodine, that most effective remedy for leprosy now known. This anti-leprosy injection is manufactured in the Chemical Laboratory of the Culion Leprosarium. Whenever the leper acquires a disease other than leprosy, he is taken to any one of the emergency hospitals, following the prescription of the physician in charge at the clinic. In these emergency hospitals the patients are also given proper care and attention by the Sisters of Charity, the physicians, and nurses.

In conclusion, life is made much more comfortable in the colony than it is thought to be, because the priests and the Sisters of Charity, the doctors and the nurses, respectively, act like apostles and angels in the performance of that sacred mission entrusted to them by God, THE TAKING CARE OF LEPERS.

## KEEPING THE BODY HEALTHY

By M. E. GRIFFIN

### I. FOOD

After the food has been selected and cooked it is ready to be eaten by the person. If the food is to do the most good for one it must be eaten when one is in a happy state of mind. If one is angry or unhappy or dislikes the food, the gastric juice does not flow into the stomach and the food is not digested. But if one is hungry and enjoys the taste of the food and is feeling happy then the gastric juice is poured out and the food is properly digested.

When the food is taken into the mouth it should be chewed very thoroughly, so one must eat slowly. This means that the food will be chewed as long as there is any taste to it. Dry food causes the saliva to flow more freely so much of the food that one eats should be dry and hard.

Water or other liquids taken with the food lessens the flow of saliva. Very cold drinks are bad, because they lower the temperature of the stomach and slow the digestive processes. Very hot drinks destroy certain elements in the saliva. It is best to drink liquids at the close of the meal. Fruit taken with the meal, lessens the need of drink but it is a good thing to drink one or two glasses of water if it is not too cold.

One should eat a variety of food so that the different meals should be varied from day to day in order to get all the elements needed and to keep a good appetite. But one should not eat too many things at a single meal and the food should be simply prepared.

It takes about four hours for the stomach to digest a meal and then it needs a rest before taking another meal, for the stomach muscles become tired just as the muscles of the arm tire when used. Among the people of some nations only two meals a day are eaten. Unless one is doing heavy work one should make the third meal a light one.

Eating between meals, such things as candy, ice cream, etc., is bad because the stomach gets no rest. During sleep the stomach works very slowly so one is likely to sleep badly if one eats just before going to sleep.

Usually one should eat no food within four hours before retiring. If one does take food it should be ripe fruit or fruit juice which does not require digestion.

If one is really hungry, a glass of milk and crust of bread can be taken without harm.

One should eat at regular hours. Our bodies form regular habits. If we eat at certain hours the stomach is prepared for it, but if we eat at irregular hours the stomach is taken by surprise and doesn't know what to do. If one cannot take a meal at the regular hour, it is a good idea to eat a little ripe fruit so as to keep up the usual intestinal activity. Violent exercise, either just before or just after eating, slows digestion, as the blood is drawn from the stomach to other parts of the body.

When one is too tired the food is likely to remain in the stomach a long time undigested. One should not be angry or excited when one eats.

The body needs a certain amount of food each day in order to help the body to grow and to keep it in repair. Most Filipino children do not eat as much food as they need, nor do they eat the right kind of food, and so they are undernourished and underweight. When one is underweight one does not feel like working hard. The body does not have enough food for its needs so it calls on the muscles and other organs. Pupils who are underweight do not do well in their studies, or in play or work, such as gardening or shop work. A very important thing is to have the diet properly balanced. About one-tenth of the amount one eats should be proteins, three-tenths fats, and six-tenths carbohydrates. Milk should be used a great deal. One should drink milk and eat it in the form of soups and puddings. Eggs and mongoes can be used instead of fish and meat, and leafy vegetables and fresh fruits are very important.

Many Filipinos suffer from constipation; that is, the waste matter is not removed from the body each day as it should be. This is because they eat too much rice and too little fresh fruit and green vegetables. In the Philippine Islands there are fresh fruits and vegetables the year round and the Filipino people ought to be very well nourished instead of being under or overweight. There are also carabaos and goats to furnish fresh milk.

## II. CLEANLINESS

Wherever a group of people live there is a certain amount of waste matter to be disposed of. If the town is properly managed the garbage or waste is removed each day from the houses or carried away by sewers. If this is not done the people are likely to become sick. So the cells which make up the body not only take in food and oxygen but send out waste matters. These wastes must be promptly removed or the cells become sick.

There are four organs by means of which waste matters are removed from the body: the intestines remove the indigestible and unused parts of the food, the lungs carry off the carbon dioxide. The third and fourth organs are the kidneys and the skin.

When fats and carbohydrates are burned in the body they are changed into a poisonous gas called carbon dioxide and water. The gas passes off through the lungs, while the water is passed off through the lungs, the kidneys and the skin.

The burning of proteid foods produces, beside carbon dioxide and water, a certain amount of wastes which are taken from the blood and sent out of the body by the kidneys. A small amount both of the carbon dioxide and of other wastes passes out through the skin in the perspiration. The kidneys are always at work and when for any reason they stop working, death soon takes place.

Drinking water freely is good for the kidneys as it dissolves the poisons in the tissues and aids the kidneys in removing them.

In a warm country where one perspires freely one must drink enough water to make up the loss. Overeating, especially of protein food, increases the work of the kidneys.

The kidneys and skin work together and whatever interferes with the work of one makes more work for the other. Too little exercise, too few baths, failure to remove the waste matter from the intestine every day, the use of alcohol, tobacco, tea, coffee, and eating too much meat are the chief causes of kidneys diseases.

The skin has four uses:

1. To form a protective covering of the body in order to prevent the entrance of harmful substances, such as germs.
2. To regulate the heat of the body,
3. To receive impressions of heat, cold, pain, etc., and
4. To a small extent, to assist the lungs and kidneys in the work of excretion.

The work of the sweat glands, of which there are not less than two and a half millions, is to cool the body by pouring out water on the skin. When it evaporates before it becomes visible it is called insensible perspiration. From one-half to two liters is produced each day. It is by the evaporation of the perspiration that the body is cooled. Exercise or heat greatly increases the amount of perspiration so that it becomes visible and is known as sensible perspiration.

When the water evaporates from the surface of the body, the waste matter it contained remains on the skin and becomes mixed with oil from the sebaceous glands, with dead skin, and with dust from the air and the clothing. If this waste is not regularly removed by bathing and rubbing of the skin it will form a coating all over the body and interfere with the work of the skin.

Where there is dirt, there are germs. If the skin is dirty these germs will grow and may get into the hair follicles and the sebaceous glands and cause pimples and other skin eruptions. A person who is well will have a clear complexion.

At least once every day the body should be bathed with soap and water. A good soap should be used and after it has been rubbed all over the body, the body should be thoroughly rinsed with fresh clean water and then the body rubbed with a rough towel.

In case of sickness it is especially necessary to have the daily baths and plenty of fresh air because more poisonous waste is thrown off from the body than during health and we should make it easy for the skin to be active.

The hands should be washed many times a day, always just before eating, or handling food if one is cooking and just after visiting the toilet.

The hair and scalp should be kept clean by frequent washing and brushing, the nails should be cleaned every day, and the teeth brushed after each meal.

# BUILDING THE HEALTHY BODY

By M. E. GRIFFIN

## PART I

The human body as a whole is made up of tiny cells, so small that they can only be seen with a magnifying glass, but in large numbers, they become bones, muscles, nerves, and all the organs of the body. All these cells are alive, and they need food to keep them alive and to give them energy for their work and to keep them warm. When you become hungry your body is calling for fuel and building material. The body is like a house in the way it is built, but like a machine in the way it works and wears out. The body must be constantly repaired so that people who live long lives rebuild the body many times. If one is careful to furnish the proper materials for building as often as they are needed one keeps the body healthy and such people live long, useful lives. Many people do not do this and some part is worn out and the body dies. In life the body is always warm, and to keep it warm the body burns up its cells just as wood is burned in a stove. The fuel used by the body to enable one to work and play is obtained from the food that one eats. If the body does a great deal of work more food is needed than when little work is done. The body does a very large amount of work in a day; the heart works day and night and so do the lungs and the muscles which help us in breathing. So food does two things, it builds the body, and it produces the energy which is needed to keep the body warm and to enable the various organs of the body to do their work.

The body is made up of many different substances, the chief ones being oxygen, hydrogen, carbon, nitrogen, and lime. All these substances the body *must* have and all these things come from the earth, the air, and the water.

We breathe the air and drink the water but the plants obtain elements from the earth as well as the air and the water, and to build the healthy body, one must eat the roots, the leaves, and the seeds of vegetables and grains and the fruits which grow on trees and smaller plants. When we eat meat we eat plants second hand.

The foods which furnish energy are carbohydrates and fats.



The building material of the body comes from the proteids. Other substances needed are:

Salts (lime, magnesia, phosphorus, potash, iron, and other elements).

Cellulose, an indigestible substance found in vegetable foods, which increases the bulk of the food so that the stomach and intestines work more actively and the waste matter of the body is more easily removed.

Vitamines, substances which are found in fresh, uncooked foods, which are absolutely necessary for the nourishment of the body. Beriberi is caused by the lack of certain vitamins. Rickets, a disease of the bones, is caused by the lack of vitamins. Certain skin and eye diseases are caused by the lack of vitamins. This is one reason you should drink fresh milk and eat fresh fruits and vegetables.

The carbohydrates are the energy-producing foods and if not needed will be stored in the body.

The proteins are the building foods and they cannot be stored in the body so one should not take more than is needed each day. Certain minerals are needed in small amounts. Common salt is one, found in most of our foods; lime is another. It is especially needed to build the bones, including the teeth, and is found in milk, eggs, and grains. Iron is needed to form the red blood cells. This is found in yolk of egg and the green parts of vegetables.

Another substance is water, which makes up a large part of the body. Water is lost from the body in the removal of waste matter. It also passes off through the lungs and skin. About two liters is lost each day and this must be replaced by drinking water, or by eating foods containing water. Potatoes are about four-fifths water, while rice contains very little water.

Oxygen is another absolutely necessary substance. This we obtain from the air. If oxygen is cut off from the body for only a few minutes one dies.

## PART II

After the food has been brought from the market or garden and it has been prepared for you to eat, a number of things happen to it before it becomes part of your body. Before swallowing the food it must be chewed and partly digested in the mouth.

Every child *should* have two rows of hard, white teeth which can be used to cut up the food and to grind it to a soft pulp. The tongue helps by moving the food around in the mouth and the saliva, the digestive juice of the mouth helps to soften the food. Many people, especially children, cannot chew their food properly because their teeth have big holes in them and they ache, and hot and cold foods make the exposed nerves jump. This means that the food is swallowed without being properly chewed and the starches, such as rice and bread, have not been partly digested by the saliva. It *should* be very thoroughly chewed. One should not drink while there is food in the mouth as it becomes too soft and so is not chewed enough.

From the mouth the food passes to the stomach. In the stomach is another digestive fluid—the gastric juice. The chief action of this juice is to liquify the food. After the food has been thoroughly liquified it passes from the stomach in small amounts, until at the end of four or five hours the stomach is empty.

In the intestine digestion is completed by the juices from the intestine and from two large organs near the stomach called the liver and the pancreas. The saliva in the mouth digests the starches; the gastric juices, in the stomach, the proteins; the bile, from the liver, the fats; while the pancreatic juice, from the pancreas, does all three things.

In the intestine are little finger like projections which suck up the digested food very much as the roots of a plant suck up nourishment from the soil.

While the digested food is absorbed for use in the body, the indigestible parts of the food and unabsorbed food are carried into the large intestine and gradually moved forward and finally discharged from the body. If these wastes remain in the body, one becomes sick, loses one's appetite, has headache, and bad breath. The waste matter gets into the blood and the liver has more work than it can do getting rid of the waste matter. It is very easy to form the habit of removing the waste matter from the body every day.

The digested food after being absorbed by the walls of the intestine, is changed into blood, and passes into the blood vessels in the walls of the intestine. From here it is taken to the liver, the largest organ in the body. The starch is stored in the liver until it is needed by the body for body work or heat production when it is given out as needed. When any metallic poison is

taken into the body, the liver retains as much as possible. Vegetable and animal poisons are destroyed by the liver. The liver stores up the vitamins which are needed for growth. These are found mainly in milk and the green parts of plants. It is a good thing for growing boys and girls that the liver stores the vitamins in this way for one will not stop growing if for a day or two one eats food which does not contain these vitamins. If these vitamins are absent from the food of animals for a long time the animals not only stop growing but their eyes ulcerate and they become blind.

Plant are the original source of vitamins. There are five different vitamins and milk contains all of them. By eating spinach, cabbage, tomatoes, potatoes, and other vegetables and fresh fruits, one also gets the vitamins.

A part of the blood passes through the liver to the heart and part is taken from the intestines to the thoracic duct by which it is carried to the heart. The heart then pumps the blood all over the body and each kind of tissue takes from the blood the material needed for its own use and builds and repairs itself. So if the proper foods and the proper amounts of food are furnished the body will be well nourished, but if not some tissue or organ will suffer and one will have malnutrition, that is, "bad nutrition."

## MISCELLANEOUS

---

### AGUSAN

Only routine works were accomplished during the month. One leper was segregated and confined in the detention cottage. Two lepers escaped during the month but returned voluntarily to the cottage after two weeks. At present there are four lepers confined in our cottage ready for collection.

### ALBAY

There were treated during the month 181 cases of yaws.

The general health index is "good." There were no epidemics, although there were still mild cases of influenza. The prevailing diseases were influenza, pulmonary tuberculosis, convulsion of infants, acute bronchitis, and malaria.

### ANTIQUE

The campaign to prevent any outbreak of dysentery in the province has been carried on in every detail; besides the antidysentery injections, and the enforcement of the ordinance regarding sanitary disposal of excreta and protection of food, an extended lecture campaign was carried on by the personnel.

The general health condition is good throughout the province, with the barometer curve under normal. The total deaths compare favorably with the total last year. Barometer curves in Patnongon and Pandan show some instability, with tendency to increase in Patnongon.

### BATANGAS

The condition of the district remains on its normalcy, although a very slight increase of the general mortality of the province is noted due to the increase of the mortality from prevailing and most common diseases. The index of the province is being 17.58 as against 17.51 of last year.

### CAGAYAN

The most important works performed during the month were: campaign against dysentery, measles, typhoid fever, and varioloid; vaccinations in places where cases occurred; quarantine and isolation of patients; house-to-house inspections; treatments; disinfection; and supervision of stores and public market where foodstuffs were sold.

### CAMARINES NORTE

The general health condition of the province is normal. Sporadic cases of dysentery were however reported in of the different barrios of the municipality of Daet.

**CEBU**

The general sanitary condition of the places inspected were all very satisfactory, with the exception of Danao, where some sanitary ordinances are not well enforced, for which two sanitary inspectors from the city have been detailed to the said municipality to enforce the sanitary ordinance and great improvement have been observed after the campaign.

**LANAO**

The National Hospital Day was observed on May 12, 1928. The celebration was characterized with "Open House Day" to which nearly 900 persons with about 600 Moros—children and adults—visited the hospital. A Moro baby contest, the first of its kind, was held in the Lanao Public Hospital with 15 children under one year attended. The provincial governor addressed the parents explaining the meaning of the occasion and gave some information about the work and aim of the hospital service and the personnel.

**LA UNION**

The general health condition of the district is good. No epidemic is registered during this month. Only a sporadic dysentery case had been registered at Caba and measure was taken already.

**NUEVA VISCAYA**

The National Hospital Day was celebrated successfully in this town on May 12, 1928. Invitations have been issued to all Government officials, clergymen, societies, organizations, prominent and private citizens. The hospital wards have been thrown open to the public all day long for inspection. In the afternoon a public procession, headed by the Philippine Constabulary, have been made around the plaza and ended to the hospital. A program was rendered. High Government officials spoke on the advantages of the hospital. About 500 people attended and visited the hospital during that day.

**ZAMBALES**

The general health condition of the district is normal. The communicable diseases registered were: amœbic dysentery in Subic, 5 cases and 1 death; bacillary dysentery in Subic, 1 case and no death.

**PEOPLE REFUSING VACCINATION MAY BE PROSECUTED  
IN COURTS**

The health service issued a circular in which it holds that vaccination is obligatory and court action may be taken against any one refusing to take it.

In the revised ordinances of the city, it is provided that "For the purposes of preventing and suppressing reportable and communicable diseases, persons may be inoculated with prophylactic substances recognized by standard medical writers and no person shall refuse to permit or receive such inoculation or hinder or obstruct in any way such protective measures as may be deemed advisable by the Director of Health or his authorized representative," the circular states.

It was stated, however, that the health regulations have permitted that residents refusing to be vaccinated by the health officers may be

vaccinated by their private physicians, in which case certificates to that effect must be produced at the request of the officer concerned. Warning is also issued in the circular against the practice of people of endorsing or lending their vaccination certificates to other people.

#### **HEALTH SERVICE AND TEODORO YANGCO JOIN FORCES IN FIGHT AGAINST YAWS**

The Philippine Health Service has entered into an agreement with Teodoro R. Yangco, Filipino philanthropist, whereby the former promises to conduct a vigorous campaign against yaws in the Province of Zambales with Mr. Yangco paying one-half of the total cost of the undertaking. Dr. Perpetuo Gutierrez, in charge of the contagious skin diseases campaign of the Bureau of Health, is leaving for that province to start his work.

#### **BUKIDNON QUININE HAS GOOD PROSPECT**

The Bukidnon quinine plantations of the Bureau of Forestry are well on the way toward a fruitful year, it was learned from forester Tabalt, in charge of the plantation, who returned from the South. He declared that the young quinine seedlings are waiting for transfer to the seedbeds. All the quinine seeds ordered from Java last year, worth about ₱4,000, have been germinated, he said.

The quinine seedlings will be transplanted in the plantations in about two years. They are difficult to grow because of their minute size and their delicate tissue.

#### **SPECIAL WARD FOR CHRONIC INSANE PATIENTS IN SAN FELIPE NERI, RIZAL**

The release of ₱100,000 is sought by the Bureau of Public Works for the construction of a ward for chronic insane patients in the Insular Psychopathic Hospital at San Felipe Neri. Transfer of the women insane to the finished wards will be made next July, and the present premises occupied by them will be used by the malaria-control section of the Philippine Health Service for laboratory and field experimentation.

At present, the administrative building and the ward for female insane are already complete. The kitchen is also nearing completion. As soon as the institution can be run independently in the new place at San Felipe Neri, Rizal, the insane of the San Lazaro Hospital will be transferred there, it is announced.

The proposed ward will be given to the chronic patients in order to segregate them from those who have great chances of recovering. Doctor Manalang, chief of the malaria section, visited the women's insane ward at the San Lazaro Hospital. He believes that the place will afford the growing of a botanical garden for mosquito experimentation.

# GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of May, 1923]

## ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1928<sup>1</sup>

### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>324,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

### BY DISTRICTS

Districts	Population
<b>No. I. MEISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
<b>Total.....</b>	<b>129,181</b>
<b>No. II. SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III. PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,847
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,937
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,663</b>
<b>Grand total.....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, MAY, 1928**

Date	Pres- sure mean <sup>1</sup>	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	
1-10.....	757.36	28.5	35.9	1	22.5	5	30.9	31.3
11-20.....	57.84	28.7	34.6	17	24.2	20	31.3	31.5
21-31.....	57.92	28.4	35.2	30	24.3	24,30	31.2	31.4

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	77.6	84.2	6	69.9	1
11-20.....	78.4	82.6	16	75.6	19,20
21-31.....	79.6	89.6	22	75.9	30

Date	Prevailing direction	Wind			Atmidometer <sup>3</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	SW.	1,958.0	309.0	9	44.3	6.3	1
11-20.....	NE quad	1,699.5	311.0	11	37.2	4.6	19
21-31.....	SW.	1,869.5	246.0	27	39.3	6.2	26

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	78-25	10-50	1	50.1	6
11-20.....	71-20	9-40	20	38.3	4
21-31.....	66-30	10-25	24	14.6	5

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.



# NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	7	5	12	45.11
Filipinos.....	617	568	1,185	46.81
Spaniards.....	6	4	10	60.27
Other Europeans.....	3	2	5	52.32
Chinese.....	24	24	48	31.67
All Others.....	5	8	13	70.07
Total and average.....	662	611	1,273	46.22

# NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MEJIC:</b>							
1. Tondo.....	162	138	300	10	10	20	320
2. San Nicolas.....	27	24	51	1	2	3	54
3. Binondo.....	18	25	43	2	1	3	46
Total.....	207	187	394	13	13	26	420
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	65	73	138	3	3	6	144
5. Quiapo.....	33	17	50	2	1	3	53
6. San Miguel.....	17	12	29	1	1	2	30
7. Sampaloc.....	96	92	188	7	7	14	202
Total.....	211	194	405	13	11	24	429
<b>No. III, PACO:</b>							
8. Port Area.....	1	1	2	1	1	2	4
9. Intramuros.....	27	23	50	2	2	4	52
10. Ermita.....	45	39	84	2	2	4	88
11. Malate.....	71	68	139	6	3	9	148
12. Paco.....	34	34	68	3	1	4	72
13. Pandacan.....	14	19	33	1	1	2	34
14. Santa Ana.....	12	16	28	1	1	2	29
Total.....	204	199	403	14	7	21	424
Grand total.....	622	580	1,202	40	31	71	1,273

Attended by physicians: living, 473; stillbirths, 29.

Attended by midwives: living, 80; stillbirths, 5.

Attended by families: living 720; stillbirths, 22.

**NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE  
CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	3	.....	3	11.28
Filipinos.....	303	245	548	21.65
Spaniards.....	3	2	5	30.13
Other Europeans.....	2	.....	2	20.93
Chinese.....	27	3	30	19.79
All Others.....	4	1	5	26.95
<b>Total and average.....</b>	<b>342</b>	<b>251</b>	<b>593</b>	<b>21.53</b>

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA  
BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MERRIC:</b>			
1. Tondo.....	101	91	192
2. San Nicolas.....	34	11	45
3. Binondo.....	12	6	18
<b>Total.....</b>	<b>147</b>	<b>108</b>	<b>255</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	43	27	70
5. Quiapo.....	10	6	16
6. San Miguel.....	7	6	13
7. Sampaloc.....	53	46	99
<b>Total.....</b>	<b>113</b>	<b>85</b>	<b>198</b>
<b>No. III, PACO:</b>			
8. Port Area.....	.....	.....	.....
9. Intramuros.....	19	13	32
10. Ermita.....	15	5	20
11. Malate.....	23	22	45
12. Paco.....	14	7	21
13. Pandacan.....	5	7	12
14. Santa Ana.....	6	4	10
<b>Total.....</b>	<b>82</b>	<b>58</b>	<b>140</b>
<b>Grand total.....</b>	<b>342</b>	<b>251</b>	<b>593</b>

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	116	77
Divorced.....		
Widowed.....	31	45
Single.....	254	167
Conditions not stated.....	1	
<b>Total.....</b>	<b>402</b>	<b>289</b>
<b>Grand total.....</b>	<b>691</b>	

Stillbirths ..... 56

**NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA**

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	112	75	12	3	202
1 year plus.....	35	26	3	4	68
2 years plus.....	14	5	1	1	21
3 years plus.....	2	3	1	1	7
4 years plus.....	1	7			8
5 to 9 years.....	5	8	2	4	19
10 to 14 years.....	1	6	3		10
15 to 19 years.....	10	17	9	1	37
20 to 24 years.....	21	13	5	7	46
25 to 29 years.....	14	9	5	5	33
30 to 34 years.....	10	10	1	1	22
35 to 39 years.....	13	9	1	4	27
40 to 44 years.....	10	6	3	3	22
45 to 49 years.....	20	7	3		30
50 to 54 years.....	15	9	1	2	27
55 to 59 years.....	14	11	4	2	31
60 to 64 years.....	11	6	2		19
65 to 69 years.....	5	4	2		11
70 to 74 years.....	9	6			15
75 to 79 years.....	3	6	1		10
80 to 84 years.....	6	3	1		10
85 to 89 years.....	4	2			6
90 to 94 years.....	5				5
95 to 99 years.....	2	2			4
100 years and over.....					
Age not stated.....		1			1
<b>Total.....</b>	<b>342</b>	<b>251</b>	<b>60</b>	<b>38</b>	<b>691</b>



II. General diseases not included in Class I									
43	69	Cancer and other malignant tumors of the stomach, liver, cancer and other malignant tumors of the breast, cancer and other malignant tumors of other or unspecified organs.	1	3	1	2	1	2	6
44		Beriberi:							2
47		a. Infants.							1
49		b. Adults.							1
55		Rickets.	8	13		1			22
56		Diabetes mellitus.	2	1					3
57		Anemia, chlorosis:	2	2					2
58		a. Pernicious anemia.							2
61		Diseases of the thyroid gland:	1	1					2
68		a. Exophthalmic goiter.							1
69		Chronic poisoning by organic substances.							1
70-86		Other general diseases.	1						1
III. Diseases of the nervous system and of the organs of special sense									
71		Meningitis:							12
72		a. Simple meningitis.	4	8					3
73		b. Nonepidemic cerebrospinal meningitis.	3						1
74		Tabes dorsalis (locomotor ataxia).		1					1
75		Cerebral hemorrhage, apoplexy:	10						13
76		a. Cerebral hemorrhage.	1						1
77		b. Cerebral embolism and thrombosis.							1
78		Paralysis without specified cause:							3
79		a. Others under this title.	3	1					1
80-86		b. Other forms of mental alienation.							3
IV. Diseases of the circulatory system									
87		Pericarditis.							1
88		Endocarditis and myocarditis (acute).	2	1					3
89		Angina pectoris.							1
90		Other diseases of the heart.							1
91		Diseases of the arteries:	2	5	4				12
92		a. Aneurysm.							1
93-107		Embolism and thrombosis (not cerebral).		1					1
V. Diseases of the respiratory system									
99		Bronchitis:	7	12					19
100		a. Acute.	4	1					6
101		b. Chronic.							









87-96 *IV. Diseases of the circulatory system*

90	Other diseases of the heart.....	1	2	3
92	Embolism and thrombosis (not cerebral).....	1		1

97-107 *V. Diseases of the respiratory system*

97	Diseases of the nasal fossæ and their annexa:	1		1
	b. Others under this title.....			
100	Bronchopneumonia:	1	5	16
	a. Bronchopneumonia.....			
101	Pneumonia:	1	2	3
	a. Lobar.....	1		1
102	Pleurisy.....			

108-127 *VI. Diseases of the digestive system*

113	Diarrhea and enteritis (under 2 years of age).....	2	1	3
118	Hernia, intestinal obstruction:	1		1
	a. Hernia.....		1	1
124	Other diseases of the liver.....			

128-142 *VII. Nonvenereal diseases of the genito-urinary system and annexa*

132	Calculi of the urinary passages.....	1	1	2
137	Cysts and other benign tumors of the ovary.....		1	1
139	Benign tumors of the uterus.....		1	1
141	Other diseases of the female genital organs.....		1	1

143-150 *VIII. The puerperal state*

143	Accidents of pregnancy:		1	1
	b. Ectopic gestation.....		2	2
144	Puerperal hemorrhage.....			
145	Other accidents of labor:		1	1
	a. Cesarean section.....		1	1
146	Puerperal septicemia.....		1	1
148	Puerperal albuminuria and convulsions.....		1	

151-154 *IX. Diseases of the skin and of the cellular tissue*

152	Furuncle.....	1		1
153	Acute abscess.....	1		1

160-163 *XII. Early infancy*

160	Congenital debility, icterus, and sclerema.....	1		1
-----	---	---	--	---

NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
164—														
164	Senility.			1										1
165-203	XIII. Old age													
	XIV. External causes													
177	Other acute accidental poisonings (gas excepted).			1										1
179	Accidental burns (conflagration excepted).			1										1
185	Accidental traumatism by fall.			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landlides, etc.).													
	c. Automobile accidents.				1									1
189	Injuries by animals (not poisoning).			1										1
198	Homicide by cutting or piercing instruments.			1	1									2
	Total.	2		52	38			1		4		1		98
	Grand total.	2		90				1		4		1		98

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE  
CITY OF MANILA, DURING THE MONTH OF MAY, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total		Age at death under 1 month										Total under 1 month	
			Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
All causes .....	124	78	17	8	17	12	5	5	3	4	2	1	44	30
COMMUNICABLE DISEASES:														
Typhoid and paratyphoid fever (1).....														
Smallpox (6).....														
Measles (7).....		1												
Whooping-cough (9).....														
Diphtheria (10).....														
Influenza (11).....														
Asiatic cholera (14).....														
Dysentery (16).....	1													
Meningococcus meningitis (24).....														
Other epidemic and endemic diseases (25).....														
Tetanus (29).....														
Other infectious diseases (1-42) 1.....	2	1			2	1							2	1
Beriberi (55).....	2	2												
Diseases of the nervous system (70; 71; 80; 85).....	9	15			1	2	1	2	3				2	7
Respiratory diseases (99; 100; 101; 107).....	5	6												
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....	44	24			1	1		1					1	2
Congenital malformations (159).....	13	3						1	1				2	1
Early infancy (160; 161; 162; 163).....	43	22	17	8	13	7	4	1	2	1	1	1	37	18
All other causes (43-205) 1.....	5	3												

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF MAY, 1928 (INCLUDING TRANSIENTS)**—Continued

[Stillbirths not included]

Causes of death	Age at death under 1 year														Total under 1 year								
	1 month +		2 months +		3 months +		4 months +		5 months +		6 months +		7 months +			8 months +		9 months +		10 months +		11 months +	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female
All Causes.....	10	7	5	5	12	3	13	4	8	2	10	3											
COMMUNICABLE DISEASES:																							
Typhoid and paratyphoid fever (1)																							
Smallpox (6)																							
Measles (7)																							
Whooping-cough (9)																							
Diphtheria (13)																							
Influenza (11)																							
Asiatic cholera (14)																							
Dysentery (16)																							
Meningococcus meningitis (24)																							
Other epidemic and endemic diseases (25)																							
Tetanus (29)																							
Other infectious diseases (1-42)¹																							
Beriberi (55)	4	2	1	2	1		1		1							1							
Diseases of the nervous system (70; 71; 80; 85)										1						1				1			
Respiratory diseases (99; 100; 101; 107)	3		2	2	9	1	8	1	5		6	2	1	3		2	2	2	1	7	43	22	
Gastro intestinal diseases (108; 109; 113; 115; 116; 127)		1	1		1		2	1			1		1	2		1							
Congenital malformations (159)																							
Early infancy (160; 161; 162; 163)	3	1	1	1		1			2														
All other causes (43-205)¹		1					2	1			1		1										

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set .....	22,136
Number of rats caught by spring traps.....	2,721
Number of cage wire traps set .....	525
Number of rats caught by cage wire traps.....	2
Number and kind of baits (coconuts).....	23,248
Number of poison portions placed.....	22,809
Number of rats found poisoned.....	413
Number of rats killed by clubs and other weapons.....	1,334
Number of rats found dead from other causes.....	482
Total number of rats otherwise caught, found dead or killed .....	4,952
Total number of rats sent to the laboratory for examination .....	4,952
Total number of rats found positive for plague .....	0

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF MAY, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female		Cases	Deaths	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths					
I.	No. 1.....	3	2	2	1	.....	.....	1	1	3	2	3	2	6	4
	No. 2.....	2	2	.....	.....	.....	.....	.....	.....	2	2	.....	.....	2	2
	No. 3.....	2	1	.....	.....	.....	.....	.....	.....	2	1	.....	.....	3	1
	No. 4.....	4	.....	.....	.....	.....	.....	.....	.....	5	1	3	1	8	2
II.	No. 5.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	.....
	No. 6.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	.....
	No. 7.....	3	1	.....	.....	.....	.....	.....	.....	3	1	.....	.....	3	1
	No. 8.....	7	2	.....	.....	.....	.....	.....	.....	7	2	.....	.....	9	2
III.	No. 9.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 10.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 11.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 12.....	2	1	.....	.....	.....	.....	.....	.....	2	1	.....	.....	3	2
No. 13.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....	27	9	13	3	1	1	2	2	28	10	15	5	43	15	

**REMARKS:**

Cases confirmed as typhoid fever.....	41
Cases confirmed as paratyphoid fever.....	2
By autopsy.....	.....
By blood culture.....	.....
By Widal reaction.....	0
By urine examination.....	9
By feces examination.....	0
By clinical symptoms.....	5
Cases reported among nonresident persons not included in the table.....	27
Deaths reported among nonresident persons not included in the table.....	17
Typhoid carrier—None.....	6



## CHOLERA REPORTED DURING THE MONTH OF MAY, 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Male		Grand total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I. {	No. 1.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 2.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 3.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 4.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 5.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
II. {	No. 6.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 7.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 8.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 9.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 10.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 11.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 12.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 13.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 14.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

## REMARKS:

No nonresident case was reported during the month.

Cholera carrier—2





**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF MAY, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	27	8	3	2
Varicella.....	5	5		
Varioloid.....				
Smallpox.....				
Measles.....	4	9		2
Whooping cough.....	1	2		1
Influenza.....	14	3	3	3
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	132	145	47	49
Tuberculosis of other organs.....	16	10	7	6
Beriberi, infantile.....	9	13	9	13
Beriberi, adults.....	2	1	2	1

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	13	7	3	1
Varicella.....		1		
Varioloid.....				
Smallpox.....				
Measles.....	2	1		
Whooping cough.....				
Influenza.....	2		2	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....	1		1	
Tuberculosis of the respiratory system.....	28	20	4	6
Tuberculosis of other organs.....	6		5	
Beriberi, infantile.....	2		2	
Beriberi, adults.....				

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINES FOR  
THE MONTH OF MAY, 1928**

Sera and vaccines	On hand May 1, 1928.	Received during the month	Total to be accounted for	Distrib- uted during the month	Remain- ing at the end of the month
Anti-diphtheric serum (tubes).....	150		150	51	99
Anti-dysenteric serum (ampoules).....	3	300	303	270	33
Anti-tetanic serum (units).....	300,000		300,000	200,000	100,000
Cholera vaccine (c. c.).....	6,000	66,000	72,000	37,200	34,800
Dried vaccine virus (units).....	24,800	100,000	124,800	119,650	5,150
Dysenteric vaccine (c. c.).....	18,960	99,000	117,960	106,200	11,760
Fresh vaccine virus (units).....	178,500	100,000	278,500	162,800	115,700
Mixed typhoid cholera vaccine (c. c.).....	145,740	70,200	215,940	108,300	107,640
Typhoid vaccine (c. c.).....	7,320	10,440	17,760	17,280	480

## REPORT OF ANTI-SMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF MAY, 1928

Health district	Municipal districts	Vaccinations		Inspections of persons vaccinated					
		Total vaccination	Previously vaccinated		Under 1 year		1 to 4 years		Total
			Never	Successfully	Unsuccessfully	Positive	Negative	Positive	
No. 1.....	Tondo.....	1,012	206	615	191	182	188	3	186
	San Nicolas.....	1,097	61	1,013	23	28	22	6	28
	Binondo.....	1,243	89	1,090	64	44	62	4	44
	Santa Cruz.....	1,529	108	1,297	124	118	100	320	441
	Quiapo.....	90	58	2	30	51	32	1	52
No. 2.....	San Miguel.....	52	41	1	10	28	4	2	29
	Sampaloc.....	1,933	148	1,675	110	212	105	5	218
	Port Area.....	39	1	37	1	1	1	14	15
	Intramuros.....	1,785	27	1,657	101	22	31	1	27
	Ermita.....	177	74	45	58	21	24	18	41
No. 3.....	Malate.....	170	111	9	50	56	40	3	58
	Paco.....	137	83	2	82	87	70	10	97
	Pandacan.....	69	20	5	44	23	29	2	25
	Santa Ana.....	66	42	2	22	23	21	2	23
	Total.....	9,399	1,039	7,450	910	896	728	34	1,284
								20	86
								354	834

## VACCINE VIRUS:

Remaining from last month.....	Units
Received during the month.....	8,000
Used during the month.....	12,225
Remaining for the next month.....	13,100
Total.....	7,150
	20,250
	20,250

NOTE:—Four thousand seven hundred and fifty units of the remainder is considered as used by American Red Cross and Public Welfare Commissioner.

# ANTI-DYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF MAY, 1928

268

	Health districts	Municipal districts	Number of injections made in				Total number of injections	
			Adults		Children		First	Second
			First injections	Second injections	First injections	Second injections		
No. 1		Tondo.....	438	365	591	562	1,029	927
		San Nicolas.....	14	6	3	1	17	7
		Binondo.....						
No. 2		Santa Cruz.....	184	101	226	139	410	240
		Quiapo.....						
		San Miguel.....						
		Sampaloc.....						
No. 3		Port Area.....						
		Intramuros.....	2				2	
		Ermita.....	1		3		4	
		Malate.....						
		Paco.....						
		Pandacan.....						
		Santa Ana.....						
		Total.....	639	472	823	702	1,462	1,174

Health districts	Municipal districts	Number of injections made in—												Total number of injections							
		Adults						Children						Total number of injections							
		First injections		Second injections		Third injections		First injections		Second injections		Third injections		First		Second		Third			
	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	
No. 1	Tondo.....		1,293		998		879		462		519		437		1,755		1,517		1,316		
	San Nicolas.....		732		793		556		329		312		399		1,061		1,105		955		
	Binondo.....		630		570		537		316		293		255		946		863		792		
No. 2	Santa Cruz.....		873		851		821		411		399		317		1,314		1,250		1,138		
	Quiapo.....		517		335		289		233		193		81		750		528		370		
	San Miguel.....		437		296		293		220		88		63		657		384		356		
	Sampaloc.....		1,011		772		713		316		235		196		1,327		1,007		909		
No. 3	Port Area.....		520		336		299		.....		.....		.....		520		336		299		
	Intramuros.....		25		19		18		5		2		2		30		21		20		
	Ermita.....		716		404		289		240		183		93		936		587		382		
	Malate.....		533		318		260		240		99		86		773		417		346		
	Paco.....		313		122		89		39		35		25		352		157		114		
	Pandacan.....		249		215		229		102		85		50		351		300		279		
	Santa Ana.....		294		203		122		115		89		40		409		292		162		
	Total.....		8,143		6,232		5,394		3,038		2,532		2,044		11,181		8,764		7,438		

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

"V." in persons never vaccinated; "R." revaccinations.

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Total vaccina- tions	Vaccinations		
		Never	Success- fully	Unsuccess- fully
Abra.....	5,271	858	1,530	2,883
Agusan.....	2,105	649	623	833
Albay.....	17,352	5,043	3,707	8,602
Antique.....	10,258	3,159	4,473	2,626
Bataan.....	5,548	2,255	803	2,490
Batanes.....	320	76	85	159
Batangas.....	23,021	7,252	5,878	9,896
Bohol.....	26,166	8,565	7,086	10,515
Bukidnon.....	3,654	1,461	443	1,750
Bulacan.....	19,864	6,977	6,557	6,330
Cagayan.....	39,438	8,073	26,544	4,821
Camarines Norte.....	2,922	960	668	1,294
Camarines Sur.....	6,385	1,552	1,429	3,404
Capiz.....	10,324	2,963	3,686	3,675
Catanduanes.....	19,260	2,007	7,926	9,327
Cavite.....	54,524	3,611	45,338	5,575
Cebu.....	42,522	12,787	6,699	23,036
Cotabato.....	9,175	2,732	2,846	3,597
Davao.....	15,515	6,074	5,527	3,914
Ilocos Norte.....	54,719	3,633	6,459	44,627
Ilocos Sur.....	9,694	2,386	1,671	5,637
Iloilo.....	55,897	17,864	29,399	8,134
Isabela.....	7,882	1,907	1,357	4,618
Laguna.....	53,712	6,056	41,476	6,180
Lanao.....	9,870	4,059	3,613	2,198
La Union.....	11,002	2,310	370	8,322
Leyte.....	61,669	18,250	36,196	7,223
Marinduque.....	3,250	786	1,741	723
Masbate.....	36,444	4,369	23,927	8,148
Mindoro.....	2,814	691	648	1,475
Misamis.....	10,480	3,278	873	6,329
Mountain Province.....	14,871	3,745	5,302	5,824
Nueva Ecija.....	13,250	5,123	1,676	6,451
Nueva Vizcaya.....	2,444	573	370	1,501
Occidental Negros.....	40,974	12,981	18,605	9,388
Oriental Negros.....	21,742	7,496	4,893	9,353
Palawan.....	213	69	66	78
Pampanga.....	13,588	5,184	1,034	7,370
Pangasinan.....	36,062	11,760	6,917	17,385
Rizal.....	12,745	3,712	5,793	3,240
Romblon.....	3,279	963	966	1,350
Samar.....	14,504	2,938	3,702	7,864
Sorsogon.....	10,049	2,452	175	7,422
Sulu.....	7,086	3,931	374	2,781
Surigao.....	3,289	982	1,823	484
Tarlac.....	11,366	3,131	5,720	2,515
Tayabas.....	15,242	6,997	2,123	6,122
Zambales.....	4,225	1,399	416	2,410
Zamboanga.....	3,549	1,694	492	1,363
<b>Total.....</b>	<b>859,035</b>	<b>217,773</b>	<b>340,020</b>	<b>301,242</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

NOTE.—Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928<sup>1</sup>—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive
Abra.....	476	212	962	708	778	1,505	2,216	2,425
Agusan.....	82	84	200	288	387	217	669	589
Albay.....	2,606	1,040	2,420	871	2,313	1,775	7,339	3,686
Antique.....	1,068	347	1,266	631	1,083	1,335	3,417	2,313
Bataan.....	1,476	235	1,561	528	617	287	3,654	1,060
Batanes.....	41	20	72	40	69	38	182	98
Batangas.....	3,453	850	5,096	2,297	3,500	3,620	12,049	6,767
Bohol.....	2,720	1,212	4,089	2,294	6,212	5,652	13,021	9,158
Bukidnon.....	122	91	252	351	733	934	1,107	1,376
Bulacan.....	4,260	1,121	3,857	1,880	3,130	2,719	11,247	5,720
Cagayan.....	2,250	412	3,773	1,282	9,080	11,513	15,103	13,267
Camarines Norte.....	547	135	874	239	452	184	1,873	558
Camarines Sur.....	874	344	1,266	407	1,862	893	4,002	1,644
Capiz.....	1,032	210	1,201	523	3,169	1,540	5,402	2,273
Catanduanes.....	1,289	602	2,150	872	3,819	3,396	7,255	4,870
Cavite.....	2,020	1,273	3,155	2,957	11,015	18,451	16,190	22,681
Cebu.....	4,143	1,663	4,853	2,296	5,096	6,241	14,092	10,200
Cotabato.....	293	183	620	413	1,724	1,284	2,637	1,880
Davao.....	504	204	1,186	621	3,949	2,943	5,539	3,768
Ilocos Norte.....	2,187	1,055	6,141	2,633	18,789	15,134	27,117	18,822
Ilocos Sur.....	1,120	547	1,789	950	1,921	1,593	4,830	3,090
Iloilo.....	4,242	1,277	8,077	3,062	11,966	16,034	24,285	20,873
Isabela.....	1,061	366	1,226	462	1,916	1,108	4,203	1,936
Laguna.....	1,833	1,136	2,816	2,392	9,287	16,884	14,036	20,412
Lanao.....	473	264	667	596	1,411	1,973	2,551	2,833
La Union.....	1,377	654	1,938	1,82	1,294	2,221	4,609	4,695
Leyte.....	2,311	63	8,11	2,185	15,711	11,202	26,132	13,967
Marinduque.....	433	163	172	80	340	968	945	1,211
Masbate.....	1,010	186	3,182	799	11,69	6,307	15,882	7,292
Mindoro.....	243	65	284	130	643	551	1,170	746
Misamis.....	642	326	1,050	537	1,819	1,221	3,511	2,084
Mountain Province.....	196	60	828	454	2,350	1,945	3,374	2,459
Nueva Ecija.....	1,788	761	3,179	1,366	2,114	2,033	7,081	4,160
Nueva Vizcaya.....	373	166	161	198	509	899	1,043	1,263
Occidental Negros.....	2,702	585	5,473	1,506	8,454	7,002	16,629	9,093
Oriental Negros.....	3,297	986	4,167	1,795	4,245	2,796	11,709	5,577
Palawan.....	1	1	3	2	159	18	163	21
Pampanga.....	1,618	818	1,186	562	445	640	3,249	2,020
Pangasinan.....	5,719	1,602	6,966	2,380	6,798	6,165	19,483	10,147
Rizal.....	1,916	894	728	666	1,729	2,630	4,373	4,190
Romblon.....	451	188	512	170	735	409	1,698	767
Samar.....	700	314	1,417	887	2,762	2,231	4,879	3,432
Sorsogon.....	651	279	1,237	455	3,731	1,660	5,619	2,394
Sulu.....	391	208	1,263	695	1,230	996	2,884	1,899
Surigao.....	303	108	298	159	975	815	1,576	1,082
Tarlac.....	804	575	1,676	1,398	1,130	2,373	3,610	4,346
Tayabas.....	2,419	1,266	3,426	1,534	2,701	2,280	8,546	5,080
Zambales.....	380	383	511	781	529	907	1,420	2,071
Zamboanga.....	217	173	420	399	612	758	1,249	1,380
Total.....	70,114	26,274	107,756	50,501	176,983	176,280	354,853	253,055

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY  
VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Total
Abra .....	719	454	1,173
Agusan .....	295	1	296
Albay .....	291	215	506
Bukidnon .....	379	185	564
Bulacan .....	206	106	312
Camarines Sur .....	2,034	905	2,939
Capiz .....	348	113	461
Iloilo .....	2,461	566	3,027
Laguna .....	519	318	837
La Union .....	179	31	210
Masbate .....	202	.....	202
Mindoro .....	160	21	181
Misamis .....	31	21	52
Mountain Province .....	521	369	890
Pampanga .....	639	78	717
Romblon .....	1,813	2,358	4,171
Tarlac .....	154	50	204
Tayabas .....	409	299	708
<b>Total .....</b>	<b>11,360</b>	<b>6,096</b>	<b>17,450</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan .....	354	118	.....	472
Albay .....	6,838	1,783	107	8,728
Antique .....	2,057	1,217	.....	3,274
Bataan .....	73	.....	.....	73
Batangas .....	372	210	.....	582
Bulacan .....	28	690	.....	718
Camarines Sur .....	3,901	52	.....	3,953
Capiz .....	46	46	.....	92
Catanduanes .....	253	33	.....	286
Iloilo .....	222	85	.....	307
Laguna .....	446	178	.....	624
Leyte .....	522	44	.....	566
Nueva Ecija .....	285	99	.....	384
Pampanga .....	299	.....	.....	299
Pangasinan .....	1,083	706	.....	1,789
Rizal .....	18,567	5,590	.....	24,157
Romblon .....	808	209	.....	1,017
Sorsogon .....	1,855	362	.....	2,217
Tarlac .....	776	26	.....	802
<b>Total .....</b>	<b>38,785</b>	<b>11,448</b>	<b>107</b>	<b>50,340</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay .....	93	48	41	182
Batangas .....	49	33	.....	82
Bukidnon .....	145	72	.....	217
Bulacan .....	445	454	58	957
Camarines Sur .....	36	.....	.....	36
Iloilo .....	.....	120	.....	120
Laguna .....	2,592	1,832	854	5,278
Mindoro .....	340	30	.....	370
Pampanga .....	6	6	.....	12
Pangasinan .....	296	99	38	433
Rizal .....	1,478	523	74	2,075
Tarlac .....	1,011	237	3	1,251
<b>Total .....</b>	<b>6,491</b>	<b>3,454</b>	<b>1,068</b>	<b>11,013</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.



**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	1,904	1,454		3,358
Agusan.....	2,302	1,259		3,561
Antique.....	1,271	425		1,696
Bataan.....	7,710	6,263		13,973
Batanes.....	599	560		1,159
Batangas.....	1,973	1,426		3,399
Bohol.....	871	873		1,744
Bukidnon.....	432	502		934
Bulacan.....	27	27		54
Cagayan.....	322	201		523
Camarines Norte.....	3,765	3,360		7,125
Camarines Sur.....	256	61		317
Capiz.....	79	132		211
Cavite.....	28,863	28,721		57,584
Cebu.....	3,591	1,075		4,665
Cotabato.....	192			192
Davao.....	1,064	465		1,529
Ilocos Sur.....	1,161	755	46	1,962
Iloilo.....	9,281	3,580		12,861
Isabela.....	21	15		36
Laguna.....	468	356		824
Lanao.....	5,045	2,234		7,279
La Union.....	6,771	4,425		11,196
Leyte.....	340	25		365
Marinduque.....	2,039	965		3,004
Masbate.....	268	13		281
Mindoro.....	737	430		1,167
Mountain Province.....	774	78		852
Nueva Ecija.....	1,223	1,228		2,451
Nueva Vizcaya.....	784	723		1,507
Occidental Negros.....	7,471	3,474		10,945
Oriental Negros.....	961	647		1,608
Pampanga.....	35,250	2,336		37,586
Pangasinan.....	6,534	4,401		10,935
Rizal.....	728	894		1,622
Sulu.....	30			30
Tarlac.....	1,773	1,121		2,894
Tayabas.....	4,704	2,504		7,208
Zambales.....	2,207	1,859		4,066
Zamboanga.....	6,908	1,901		8,809
Total.....	150,698	83,768	46	231,512

<sup>1</sup> Incomplete; reports from other provinces not yet received

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF MAY, 1928**

No case and no death reported during the month.

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF MAY, 1928**

No case and no death reported during the month.

**REPORT OF THE DIVISION OF SANITARY ENGINEERING CITY OF MANILA,  
DURING THE MONTH OF MAY, 1928**

Sanitary orders	Health districts			Total
	No. 1	No. 2	No. 3	
	Meisic	Sampaloc	Paco	
<b>Orders pending, May 1, 1928:</b>				
Minor.....	121	97	193	411
Sewer.....	25	38	4	77
Vacating.....	8	10	.....	18
Filling.....	25	39	22	86
<b>Total.....</b>	<b>179</b>	<b>194</b>	<b>219</b>	<b>592</b>
<b>Orders issued during the month:</b>				
Minor.....	4	9	54	67
Sewer.....	1	.....	.....	1
Vacating.....	.....	.....	.....	.....
Filling.....	.....	4	.....	4
<b>Total.....</b>	<b>5</b>	<b>13</b>	<b>54</b>	<b>72</b>
<b>Orders completed during the month:</b>				
Minor.....	8	5	4	17
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	1	.....	1
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>8</b>	<b>6</b>	<b>4</b>	<b>18</b>
<b>Orders cancelled during the month:</b>				
Minor.....	.....	2	3	5
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	1	.....	.....	1
<b>Total.....</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>6</b>
<b>Orders pending, May 31, 1928:</b>				
Minor.....	117	99	240	456
Sewer.....	26	48	4	78
Vacating.....	8	9	.....	17
Filling.....	24	43	22	89
<b>Total.....</b>	<b>175</b>	<b>199</b>	<b>266</b>	<b>640</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	36	59	47	142
<b>Permits for minor building constructions:</b>				
Approved.....	37	64	33	134
Disapproved.....	21	12	7	40
<b>New buildings completed.....</b>	<b>12</b>	<b>21</b>	<b>20</b>	<b>53</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	6	55	28	89
Disapproved.....	6	9	4	19
<b>Prosecutions:</b>				
Convictions.....	.....	.....	.....	.....
Dismissals.....	2	.....	.....	2
Amount of fines.....	.....	.....	.....	.....
<b>Plumbing permits issued.....</b>	<b>39</b>	<b>71</b>	<b>54</b>	<b>165</b>
<b>Plumbing projects completed.....</b>	<b>40</b>	<b>52</b>	<b>49</b>	<b>141</b>
<b>Premises connected to the sanitary sewer to April 30, 1928.....</b>	<b>2,556</b>	<b>4,380</b>	<b>777</b>	<b>7,713</b>
<b>Connected during the month.....</b>	<b>2</b>	<b>7</b>	<b>8</b>	<b>17</b>
<b>Total.....</b>	<b>2,558</b>	<b>4,387</b>	<b>785</b>	<b>7,730</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

JUNE, 1928

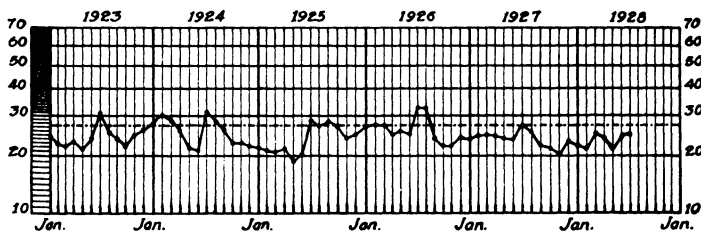
No. 6

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY OF MANILA*



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING



# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Synopsis of San Lazaro Leprosarium, by D. S. Aguilar.....	279
Historical Review of Health Activities in the Philippine Islands, by Dr. Gabriel Intengan .....	283
Miscellaneous .....	308
General Statistics .....	311



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**JUNE, 1928**

**No. 6**

**SYNOPSIS OF SAN LAZARO LEPROSARIUM**

**By D. S. AGUILAR**

The San Lazaro leprosarium is by far one of the most interesting places to visit in the City of Manila. Situated along Rizal Avenue it appears ungainly and repulsive to the prejudiced passers-by. In some respects it resembles Bilibid Prison in that it is inclosed with high stone walls with gates closely posted with guards. The building in which the lepers live is an antiquated two-story structure almost worn out by the lapse of time. It is mostly made of stones with windows and doors entirely covered with iron bars. Not including the laboratory, store room, and dining halls, it consists of 15 wards, each ward accommodating around 30 patients. They are provided with iron beds and other bedding equipment. The hospital as a whole is sanitary and well-ventilated.

**ADMISSION AND PAROLE**

As a result of the increasing number of cured patients accomplished in San Lazaro leprosarium, lepers from different parts of the Archipelago come to the hospital to present themselves voluntarily for medical treatment. There is scarcely a day in the hospital that is void of admission. This includes, of course, those that are arrested by the agents of the law.

Once a leper is admitted after being found positive in the blood test which is immediately conducted at the time of his arrival, he has to submit himself to compulsory segregation until his parole is granted him. During the period of his confinement he spends his unfortunate life inside a limited area of

ground commonly known as the hospital campus. Permission is granted by the chief of the hospital for Manila only to anyone who shows real necessity for leaving the hospital.

In the course of time if he is found negative, his quarantine continues for 6 months more. Within this period of time he is examined at least once a month by the physician in charge of the leper department. If at the end of this required time, he is never found positive bacteriologically, he is released from the hospital after facing an examining committee of physicians who have the final say on his parole.

#### **FREE FOOD AND MEDICAL TREATMENT**

The Government is spending annually a large sum of money for the subsistence and medical treatment alone of the lepers within the leprosarium. These are afforded to them free of charge. Their daily diet consists chiefly of bread, butter, eggs, coffee, and milk for breakfast, and rice, meat, fish, and vegetables for supper and dinner.

The efficiency of the medical treatment that is given can be best proved by the increasing number of negatives every week and by the great number of paroled patients completely cured of leprosy. The medical treatment of this disease is mostly in the form of intramuscular and local injections. Up to this time there have been three kinds of medicine so far used in the treatment of leprosy. The ethyl ester treatment has proved to be very effective.

#### **LEPER SCHOOL AND CHURCH**

The leper inmates of this institution have their own school and church. They have a complete elementary school with a total enrolment of about 70 pupils. They receive mostly academic instruction, the industrial and physical training not being given due emphasis for some reasons. They use the same textbooks as those prescribed by the Bureau of Education. Altho they suffer from the lack of parental care yet they take an active interest in the performance of their daily school duties.

A greater bulk of the inmates of the department are Catholics. They go to church regularly where Mass is said daily by leper priests. The rest of the inmates are protestants. They hold a devotional service twice a week in the schoolroom which serves as a chapel. Here they enjoy the privilege of hearing inspiring lectures from some distinguished visitors who visit the hospital from time to time.



### DAILY VISITORS TO THE HOSPITAL

In former days lepers were totally segregated from the rest of society but now, owing to the ever-increasing belief of some medical experts that leprosy in its early stages is not contagious, the friends and relatives of leper patients have been granted the privilege to visit the hospital every day. Visiting hours are arranged to this effect. One thing wonderful connected with the visit is that one could hardly distinguish the lepers from the visitors for a great deal of these inmates are so clinically clean and healthy that even the health officials themselves could hardly recognize them by a mere glance.

### LEPER ACTIVITIES

Many social activities afford the lepers opportunity to develop themselves along social lines and to enjoy the fellowship of good friends. Such is something wonderful in the life of these men and women who by force of circumstances are deprived of their personal liberty to enjoy the dignity of living as members of a free society. In spite of the fact that they suffer from the pangs of compulsory confinement imposed upon them by law, yet they are doing all that lies in their power to drive dull care away and improve the mind and the body in every way possible.

The more enlightened of the leper patients have organized themselves into societies and clubs. Monthly programs consisting chiefly of literary and musical parts are among the activities of these organizations. Debates and dramas are not unusual in these programs.

Although there is but a limited space of ground for physical activity, yet the lepers play various athletic games, such as tennis, basket ball, indoor baseball, and other group games. Athletic clubs exist to foster the love of games which are necessary for the development of a healthy body and a sound mind.

One of the most serviceable organizations in the hospital is the boy scouts. They have proved themselves indispensable on various occasions. In many ways they have shown that they are truly scouts ever prepared to do their duty to God, country, and man.

Another valuable organization is the Camp Fire Girls. Under the efficient direction of outside instructors specially trained for this work, this organization has become a moving factor in the social life of the hospital. In the recent Camp Fire Girls' Day they have ably shown to the public something worthy of commendation and emulation.

One may be surprised to know that the younger sex have dances at least once a month. They have their own string band which can play just as well as any local band. They have cinematograph every Saturday where the latest films of the day are screened.

In short, the hospital assumes the characteristics of a modern village. It is almost complete in itself. But in spite of all these activities which seem to make "life behind the bars" appear pleasant and enjoyable, the patients as a whole are not contented of the place in which they live for there is no place in all the world that is sweeter than home, however poor it may be.

# HISTORICAL REVIEW OF HEALTH ACTIVITIES IN THE PHILIPPINE ISLANDS <sup>1</sup>

By GABRIEL INTENGAN, M.D.  
*Philippine Health Service*

1. The most important event in the early part of the sixteenth century was the discovery of the Philippine Islands by the Spaniards. This third great geographical discovery was made by Magellan when he sailed across the Pacific Ocean from San Lucar de Barrameda, Spain, on August 10, 1519. On March 16, 1521, Ferdinand Magellan landed on Philippine soil, and the Spaniards made the first deal with Filipinos on March 18, 1521.

2. In attempting to discuss something about health activities in the Philippines during the early part of Spanish domination, we have to bear in mind that the only sources of data are the Friar chronicles, especially that of the Franciscans.

3. The main purposes of Spanish colonization were: First, and above all other considerations, the religious conversion of the natives; second, commerce; and third, political aggrandizement. Charitable institutions were founded by the missionaries, who were, according to the testimony of all writers, imbued with a deep spirit of self-sacrifice. The first civil hospital was established by Governor Francisco de Sande (1575-1580). For the expense of this hospital, he assigned the tribute of about one "thousand Indians" (natives). Later, during the governorship of Morga (1595-1596), there were three hospitals: two for Spaniards and one for Filipinos. In 1603, the first general hospital for all kinds of diseases was constructed by the Franciscan Order. In a report presented in 1618, we learned that other hospitals had been established in the provinces. Says an official report:

The hospitals which your Majesty has in the Philippine Islands are: the Royal Hospital where soldiers are treated; another in Cavite where sailors are treated; another for the Indian natives conducted by the Franciscan friars; another for the Sangleys, by the Dominican friars; another by La Misericordia for the Mulatoes; another at the Hot Springs in Los Baños, by the Franciscan friars; another in Cagayan; another in Cebu; another in Maluco; and another for the convalescents, by the friars who

---

<sup>1</sup> Read before the Seventh Far Eastern Congress of Tropical Medicine, Calcutta, December 8, 1927.

are coming back from the Indias. The orphanages of San Andres and Santa Potenciana in Manila are two other charity institutions where shelter is given to the needy women and girls of the city. In provisions for the sick and helpless, Manila, at the opening of the seventeenth century, was far in advance of any city in the English colonies for more than a century and a half to come. Such is the conclusion arrived at by an American scholar after a comparative study of Spanish and English colonies.

4. As Legaspi was the first Spaniard to make a permanent settlement in the Philippine Islands (1565), he was, of course, the first to devise laws for the protection of public health. He adopted a sanitary code, inspired by the spirit of the laws of the Indies, which included matters of health and sanitation. In charge of the Franciscans, Legaspi established a public dispensary, which later became the San Juan de Dios Hospital. This hospital is still existing. In 1632, another hospital was built exclusively for the natives. This is now called the San Lazaro Hospital. During the same century, other hospitals were erected in the provinces by the same order. The first special leper institution was established in Manila in 1631 by the Franciscan order.

5. General Francisco Carriedo y Peredo, a former Governor-General of the Philippine Islands, in a will executed in December, 1733, bequeathed the sum of ₱10,000 to the city and commercial interests of Manila for the establishment of a waterworks, the only condition exacted being that the poor shall be benefited by it. As nothing came out of the above offer, he again bequeathed, in a will dated July 27, 1743, the amount of ₱10,000 for the same purpose, with the stipulation that the convent of San Francisco, the San Juan de Dios Hospital, and the Monastery of Santa Clara shall receive free water on contributing to the cost of the works. The Municipal Board decided not to utilize this money at once, and invested it in merchandise of the annual galleons, which carried eastwards to Acapulco all the products of the Orient. The investment proved so profitable that in 1762 the amount available was nearly ₱250,000. During the English occupation of Manila, however, the Carriedo funds were raided and nothing was left except what was invested in the galleon trade. In 1867, the Carriedo funds amounted to ₱177,853.44. In 1869, during Gandara's administration, the project was again considered. The system was designed by Don Genaro de Palacios y Guerra, a civil engineer of the Royal Corps of Engineers in the Spanish Army, who started his investigation in December,

1869. On January 23, 1878, the first stone of the work was put in place. The work was completed and officially inaugurated on July 21-25, 1882.

In 1784, the Spanish government took possession of the San Lazaro estate, which was turned over to the Franciscans for the establishment of a leper institution, with the understanding that a portion thereof was to be used as site for the hospital and the remaining part would be leased. The revenue received therefrom were devoted to the support of the lepers.

6. In 1805, the Bureau of Vaccination was created, and rules and regulations regarding the distribution and preservation of vaccine virus were prepared by the Central Board of Vaccination in 1806. On June 23, 1813, an order was issued creating a Board of Health for the City of Manila. In 1851, two physicians were appointed to make visits to the indigent people and advise them how to preserve their health. On November 5, 1854, this Board was abolished. On November of the following year, the first maritime quarantine law was enacted; which law was later amended in the year 1860. Boats coming from foreign ports were inspected and bills of health were issued. During the term of Governor-General Norzagaray (1857-1860), general sanitary improvements were introduced in Manila. The Botanical Garden established, public highways constructed, parks laid out, the filling of lowlands effected, and sub-surface sewers built. In 1863, the provincial and municipal authorities were given instructions to coöperate with the health officers on matters regarding public health, such as housing water supply, factory, market conditions, etc. Laws regarding public health were passed. In 1870, provincial and municipal boards of health were established in regularly organized towns. The importance of the sewage problem, altho sanitary service in those days was practically well, was recognized, as revealed by the Royal Decree dated August 30, 1882, approving the classification of estero of the City of Manila. Major D. Carlos de la Heras of the Royal Corps of Engineers had a project, which was used as basis for classification of a combined sewer system to discharge along the Pasig River; and a system of underground sewers built of rectangular blocks of adobe stones within the Walled City and a small part of the commercial section on the north side of the Pasig River.

7. In 1875, the University of Santo Tomas, which was founded in April, 1611, turned over its first medical graduates. For the

first time, the positions of health officers, the so-called "médicos titulares," were created on March 31, 1876. In 1883, the Superior Board of Health was organized. In 1888, the office of Medical Inspector of Health and Charity for the entire Archipelago was created, the "médicos titulares" being the chief health officers. Besides, vaccinators were appointed.

8. In 1892, the position of legal physician was created. From this period, public health activities were entrusted to a dependency of the Bureau of Civil Administration. This dependency was the office of the General Inspector and one administrative officer, with an advisory body.

9. The production of vaccine virus was entrusted to the Central Institute of Vaccination, which was composed of the following personnel: His Excellency, the Governor-General, chairman; His Grace the Archbishop of Manila; the Lord Mayor of the city; the city attorney; the provincials of the Agustinian, Franciscan, Dominican, and Recolect orders; the Chief physician of the institute; and the assistant chief as secretary. The specific duty of the Central Institute was to preserve and propagate the virus. The virus was passed from arm to arm every nine days among susceptible children, later in young calves. To preserve the virus in a more or less natural state, it was placed between two pieces of glass, one inch square, and sealed with paraffin or wax, or kept in capillary tubes, and, in this state, transported to the provinces.

10. After the American occupation on August 13, 1898, General MacArthur, looking over the sanitary situation and seeing the data available at the time not complete and reliable, became convinced of the imperative necessity of drafting a new sanitary organization.

11. General Order No. 16, dated Headquarters of the Department of the Pacific and Eight Army Corps, Manila, P. I., September 10, 1898, assembled a new Board of Health for the City of Manila. The board was formally organized by General Order No. 15, dated Headquarters of Provost Marshall General, Manila, P. I., September 29, 1898. The new board was composed of five members, with two Filipinos as honorary members.

12. The first rules and regulations of this Board were issued on October 13, 1898. One of the most important problems that the newly organized board was called up to deal with, states a report, was that of epidemic of small pox. The old Spanish vaccine farm was reestablished, and corps of city vaccinators

put to work. Eighty thousand people in the City of Manila has been vaccinated during that fiscal year, 82 per cent of the vaccinations being successful. In the meantime, a smallpox hospital for the treatment of venereal diseases had been established. A veterinary corps was also organized.

13. On August 26, 1899, the Provisional Board of Health was abolished, and in its stead the Office of the Commissioner of Public Health was erected. A bacteriological department was then added to the municipal laboratory which was conducted by the former Board of Health. A plague hospital was also established. The registration of births, marriages, and death, which heretofore had been in charge of the parochial priests, was established. A municipal dispensary was organized, and the work of protecting the city against smallpox, so successfully inaugurated, was continued.

14. On September 1, 1900, the United States-Philippine Commission arrived in the Islands, and in the exercise of its legislative power, a power heretofore entrusted to the military governor, enacted a law (Act 62) on December 21, 1900, authorizing the Provost-Marshal-General to establish police and health regulations in the form of municipal ordinances for the City of Manila. Matters which had heretofore been governed by rules and regulations were then embodied in ordinances and enforced by the military authorities.

15. The first health ordinance was promulgated on April 6, 1901. This ordinance, which included nearly every phase of municipal sanitation, has been the foundation of all subsequent ordinances and of the Sanitary Code. It provided, among other things, that every physician called to visit or examine any case of infectious or contagious disease should immediately cause such patient to be promptly isolated and notice given to the health authorities. Another important section was the compulsory vaccination clause, which made it the duty of every person in Manila to be successfully vaccinated at intervals of one year, and provided that every person who had been exposed to the infection of smallpox, including varioloid, should be successfully vaccinated or revaccinated a sufficient number of times, at intervals of two weeks, to render it evident that successful vaccination was impossible. It also provided for the compulsory registration of births, deaths, and marriages, the disposal of the dead, cleaning of septic vaults, abatement of nuisances,

plumbing and house drainage, practice of medicine and dentistry, and others.

16. On July 1, 1901, Act 157, providing for the establishment of a Board of Health for the Philippine Islands, was approved, and all employees of the Manila Board of Health were transferred to this board by subsequent legislation (Act 187) passed on August 5, 1901, for efficiency and economy. The law provided that the Board of Health for the Philippine Islands should also act as the Board of Health for the City of Manila. On August 6, 1901, a legislation (Act 189), providing medical attendance for civil officers and employees and their families, was enacted, and on October 1, a Civil Hospital, mainly for civil employees, was established (Act 247).

17. The next legislation was passed on December 2, 1901 (Acts 307, 308, and 309), establishing the provincial and municipal boards of health. This completed the health organization in accordance with the political division of the Philippines: viz.: insular, provincial, and municipal organizations. Compulsory vaccination, which had been enforced in Manila since the organization of the health service, was made applicable throughout the provinces, and it was provided that every person living in the Philippine Islands shall submit to vaccination as often as the health authorities may deem necessary, unless satisfactory evidence is produced stating that he is immune from smallpox. On July 14, 1902, a temporary provision (Act 429) was made for the care of invalid civil service employees at Baguio, pending the establishment of the Government sanitarium.

18. The next important health legislation (Act 310), enacted on December 24, 1901, was the regulation of the practice of medicine and surgery in the Philippine Islands. This legislation was supplemented on January 10-26, 1903 (Acts 593 and 597), regulating the practice of dentistry and pharmacy. On January 1, 1902, the committee on selection submitted its report recommending the Culion Islands as site for a leper colony. The establishment of this leper colony was made in January of 1903, and the segregation of lepers commenced in May, 1906. The Board of Health was authorized (Act 1340) on May 4, 1905, to promulgate quarantine regulations for all vessels engaged in the coastwise trade: for those entering ports of the Philippine Islands, except ports entry: and fixing penalties for violation thereof. The Board of Health extended its operation to every municipality in the Archipelago and conducted its work until



changed into the Bureau of Health on October 20, 1905, by the "Reorganization Act." The Bureau of Health, by this Act, was placed under the Department of the Interior, and the Director of Health was made the legal successor of the Board of Health in the Philippine Islands, abolishing the post of Commissioner of Public Health who was the executive officer of the board.

19. This legislation conferred ample powers on the Director of Health, who, with the approval of the Secretary of the Interior, may suspend, modify, or annul any ordinance, regulation, or order enacted or promulgated by local boards of health, municipal councils, and any local or municipal official in the exercise of his authority in matters of sanitation, when, in the opinion of said Director, such ordinances, regulation, or order is detrimental to the interests of the public health. The hospitals and sanitarium operated by the Government were merged with the Bureau of Health as a division thereof. The Bureau of Health was also charged with the duty of caring for the health of prisoners and the control and supervision of the sanitation of all insular, provincial, and municipal prisons. The veterinary division of the Board of Health was transferred to the Bureau of Agriculture. The Quarantine Service, to be administered under the direction of the United States Public Health and Marine Hospital Service, and to have such officers with duties and powers as prescribed by law of Quarantine Service, was also created.

20. On February 21, 1905, the legislation (Act 1458), regulating the establishment and maintenance of burial grounds and cemeteries, was approved.

21. On July 1, 1906, another important legislation (Act 1487), enacted on May 16, 1906, took effect. It abolished the Provincial Boards of Health, substituting for them district health officers and defining their powers and duties. This Act provided, among other things, that each province may have a district health officer who is to be appointed by the Governor-General, with the advice and consent of the Philippine Commission.

22. On October 20, 1906, the Sanitary Code for the City of Manila, now incorporated in the "Revised Ordinances," was enacted to take effect on January 1, 1907. The construction of the sanitary sewer was begun in 1906 and the first connection to the houses was made in 1909. On March 14, 1907, the district health officer was authorized (Act 1613) to organize, with the approval of the Director of Health, two or more neighboring municipalities into a municipal health district, and such munic-

ipalities composing a district may employ jointly a president of the municipal health district.

23. On January 10, 1907, the Philippine Medical School was opened. On May 18, 1907, the Pure Food and Drugs Law (Act 1655) was enacted, for the purpose of preventing the manufacture, sale, or transportation of adulterated or misbranded foods, tre, sale, or transportation of adulterated or misbranded foods, drugs, medicines, and liquor, and also regulating its traffic. On July 8, 1907, the trustees of asylum and other institutions where poor children were maintained at public expense, were authorized (Act 1670) to place such children in charge of suitable persons. The law also provides for the adoption of such children. On August 6, 1907, Act 1677, providing anatomical material for the advancement of medical science, was passed.

24. Following this, on September 12, 1907, came another important legislation (Act 1711). This provides for the apprehension, detention, segregation, and treatment of lepers in the Philippine Islands. On June 18, 1908, the University of the Philippines was founded (Act 1870), and the Philippine Medical School was merged and became the College of Medicine and Surgery of the University of the Philippines. On May 20, 1909, ₱20,000 were appropriated (Act 1931) for the establishment of training classes for the nursing profession. Said instruction was given in the Philippine Normal School under the direction of the Director of Education, supplemented by practical nursing in such hospital or hospitals as the Director of Education may designate. The first selection of those who are to take the nursing course was made by the division superintendents of schools from among the female students in the municipalities of their respective provinces. Twenty students were the maximum number allowed for the first year. This legislation was repealed (Act 1976) on April 18, 1910, by transferring the control from the Director of Education to the Director of Health. Further amendment (Act 2161) was made on February 6, 1912, by removing the restrictions as to the number of applicants of each sex that may be admitted during any one year.

25. Pursuant to the provisions of the law of the United States Congress, known as "Bill Payne," the regulations of the Bureau of Health for the sanitary control of tobacco products were first promulgated on December 2, 1909; later rules were laid down on April 1 and October 27, 1910, and August 8, 1924. The Philippine Islands Antituberculosis Society was organized on July 29,

1910. On September 10, 1910, the Philippine General Hospital was officially inaugurated.

26. On February 1, 1912, a committee was created (Act 2116) to investigate the cause of the excessive infant mortality of the Philippine Islands and the measures which should be adopted to decrease it, and appropriated for this purpose the sum of ₱10,000. The time allowed the committee for the accomplishment of its work was extended (Act 2246) on February 11, 1913, and a further appropriation of ₱20,000 was made for the expenditure of the committee. The report of this committee, which cost ₱6,525, was published in Spanish and English. On the same date, February 1, 1912, a legislation (Act 2122) was enacted providing for the confinement of insane persons in Government hospitals or other institutions for the insane, and the appointment of a board of physicians to inquire into the mental conditions of persons alleged to be insane.

27. The first step for a permanent legislation was made on February 6, 1912 (Act 2156) by the Philippine Assembly, authorizing the consolidation of municipalities into sanitary divisions, and providing for each province a special fund to be known as "Health Fund," and defining the powers and duties of the presidents of sanitary divisions who were thereafter to be appointed by the Director of Health. On the same date, funds were appropriated (Act 2147) for charitable purposes: ₱50,000 for the control of tuberculosis by the Antituberculosis Society; ₱12,000 for the protection of infants, thru the institution La Gota de Leche; and ₱8,000 for the Mary J. Johnson Hospital.

28. On February 1, 1913, a law (Act 2232) was passed providing that the number of municipalities in a sanitary division shall not exceed four. On October 23, 1913, the Philippine Assembly, in its resolution No. 54, created a committee to investigate, study, and submit the necessary recommendations for the proper reform and improvement of the health service and its branches, including the General Hospital, the Bureau of Science, and the College of Medicine and Pharmacy of the University of the Philippines. The report of this committee was submitted on January 6, 1914.

29. The first manual of the Bureau of Health for the Philippine Islands was published in 1911, and the handbook for sanitary inspectors, in 1913. During the same year, the first draft of the Provincial Sanitary Code was drawn.

30. On February 4, 1915, the legislation (Act 2461) for the prevention of hydrophobia or rabies was passed. It gave power to the Director of Health to declare the existence of rabies in any locality, and his notice and its provisions shall have the same legal effect as a sanitary regulation, and provided punishment for violators.

31. In 1914, when the Civil Government was inaugurated in Mindanao and Sulu, a public health service was also established in that region, in charge of one health officer. This service was independent of the main organization, and the chief thereof had almost the same power as the Director of Health within his territory. This service was later merged with one of the divisions of the main organization.

32. The first clean-up-week celebration was inaugurated in 1914 upon the initiative of the Director of the Bureau of Education, and held from the 14th to the 20th day of the month of December. The public schools were made responsible for its success.

33. On February 5, 1915, a Public Welfare Board was created (Act 2510) for the purpose of coördinating the efforts of all Government agencies and private organization receiving financial aid, interested in public welfare or social service work.

34. The most far-reaching reorganization of the Bureau of Health was made on February 5, 1915 (Act 2468). The Bureau of Health was changed into Philippine Health Service, and this took effect on July 1st of the same year. In addition to the statutory provisions, it provided for the creation of a Council of Hygiene and several divisions and offices, including those of the assistant director of health and the sanitary engineer, made the tenure of office of the Director of Health four years, and regulated the transfer, promotion, and commission of all physicians of the former Bureau of Health. The sanitary commission was instituted in 1916, as well as child-hygiene activities. On February 23, 1916, the amount of ₱1,000,000 was appropriated (Act 2633) for the protection of early infancy and the establishment of "Gota de Leche," a charitable public institution with the same aim and purpose. On February 24th of the same year, all sanitary laws were codified and included in the Administrative Code of the Philippine Islands (Act 2657), restricting certain powers and privileges of health officers. This code was revised on March 10, 1917, without any substantial change (Act 2711).

35. In 1918, the Antituberculosis Society established the Santol Tuberculosis Sanatorium. On February 24, 1921, the Public Welfare Board was abolished (Act 2988), and its powers and duties were transferred to the office of the Public Welfare Commissioner. In 1921, the Rockefeller Foundation for Medical Research rendered valuable and laudable service for the promotion of the public health in the Philippine Islands, by granting fellowships to doctors and nurses to take advance courses in public health in the United States. These fellowships were continued until 1925. During this period, the Foundation assigned a doctor and a sanitary engineer to work in conjunction with the Philippine Health Service. It helped in the creation of the Public Health Training School for nurses, also in the control of malaria, hookworm campaign, and rural sanitation. A hospital ship was donated by the Foundation.

36. On March 19, 1923, ₱1,000,000 were appropriated (Act 3114), to be disbursed as insular aid to regularly organized provinces for the construction, equipment, and maintenance of hospitals. The Act was amended on October 15, 1924 (Act 3168), creating local funds for the operation and maintenance of hospitals.

37. The retirement and pension of the Director of Health, all medical officers, and technical employees of the Philippine Health Service after 20 years of service was enacted on November 24, 1924 (Act 3173).

#### PRESENT ORGANIZATION AND ADMINISTRATION

38. The Philippine Health Service falls under the direct supervision and control of the Secretary of Public Instruction. At the head of the Service is the Director of Health, and as an advisory body there is the Council of Hygiene. For the proper administration, there are several divisions in the Central Office: partly scientific and partly territorial divisions, with several offices and sections. They are the Division of Communicable Diseases, which informs as to the state of public health and prepares plans for the control of communicable diseases and prevention of epidemics, conducts research into the nature and cause of disease and methods of prevention and cure, and takes charge of all prophylactic vaccinations; the Division of Hospitals, Laboratories, and Dispensaries, which exercises supervision and control over all hospitals, leprosaria and sanatoria, dental works, dispensaries and laboratories under the jurisdiction of the

Philippine Health Service; the Division of Sanitary Engineering, which acts as consultant in all matters having connection with sanitary engineering and plumbing inspection, housing and building construction problems, and fly-mosquito-rodent eradication; the Division of Metropolitan Sanitation, which has supervision over all activities and agencies for the prevention and control of diseases in the City of Manila, and whose chief is endowed with authority, emanated from the Director of Health, to execute such duties and functions as may be necessary to improve and maintain the sanitary conditions within his territorial jurisdiction. He acts also as chairman of the Pure Food Board for the entire Archipelago. What is said of this division may be applied to the Division of Provincial Sanitation, with the only difference that the jurisdictional area of the provincial division covers the whole territory of the Philippine Islands, except the City of Manila, with ample jurisdiction over the local funds allotted for municipal and rural sanitation. Outside of the City of Manila, the Chief of the Division of Provincial Sanitation, therefore, is directly responsible for all the sanitation work that is being done in the entire Philippine Islands. The Office of Vital Statistics is charged with the procurement and maintenance of vital statistics, handling of burial and exhumation permits, and conduction of statistical researches; the Office of the Executive Officer, which sees that the announced policies and instructions of the Director of Health are properly carried out, coördinates the work of all divisions and offices to insure maximum efficiency, and handles all matters relating to organization and personnel; the Office of General Inspection inspects, investigates, and reports upon the sanitary conditions, general administration, and all complaints that may be referred to it, and exercises supervision over the activities on public health nursing, school medical inspection and industrial hygiene; the Office of Property handles all matters relating to maintenance and supply of property; the Office of Records and Finance takes charge of all financial matters and maintains all records and files.

39. There are also various sections; to wit: Section of Public Health Nursing, Section on Malaria Control, Leprosy Section, Section on Vaccination, Section of Industrial Hygiene, Section on Education and Publicity, and License Section. All these agencies function under the direction of the Director of Health, who exercises general supervision and control over all matters pertaining to the Philippine Health Service and is responsible

for the efficient management of its affairs. The chiefs of divisions and offices are the administrative agents of the Director of Health and function under powers delegated by him. They are endowed with authority, under the control of the Director of Health, and in his name and under such regulations as the Director may prescribe, to conduct the routine affairs of the offices of which they are in charge and to carry out all necessary details pertaining thereto.

40. In addition to the general appropriation of the Insular Government, the Philippine Health Service is further supported by the provincial health fund constituted by the aid given by the provinces and municipalities, which aid is fixed at not less than 5 per centum of their general net income. The provincial health fund is only expended for the benefit of the province to which it belongs. Most of this money goes to salaries of the subordinate personnel, traveling expenses, and the purchase of medicines and medical supplies. Actually the Insular Government and the local governments, spent, thru the Philippine Health Service, approximately ₱0.43, per capita, for sanitation, hygiene, and hospitalization, which is just about one-fifth of the expended for public education.

41. For purposes of health administration, each province in the Philippines is organized into a health district administered by one district health officer, who is a duly qualified physician. The district health officer is the representative of the Director of Health in the province where he is assigned, and is charged with the protection of the health of the people thereof and the maintenance of sanitary conditions therein. He has the power to institute all proceedings necessary to abate nuisances, and remove the cause of any special disease or mortality. Practically all health districts are organized into sanitary divisions, in each of which is assigned a qualified physician appointed by the Director of Health as president, with practically the same powers of the district health officer, subject to the immediate control and supervision of the latter. If funds are insufficient or the services of physicians are not available, registered male nurses and others with a knowledge in sanitation and hygiene are appointed. District health officers and presidents of sanitary divisions have assistant sanitary inspectors, and sometimes district nurses also. The registration of births, marriages, and deaths is in the charge of the municipal secretary, who is appointed by the municipal president and whose salary is paid from the municipal general fund. With the exception of the presidents of sanitary

divisions, all medical officers in the Philippine Health Service are commissioned by the Governor-General after they have passed the required civil-service examination. Persons, possessing special qualifications, are sometimes commissioned and given original appointment without taking any civil-service examination. There are four grades in the commissioned service, each of which may be obtained after passing the examination required for the grade. The salaries of commissioned officers are fixed by law according to their rank, and are payable from the insular fund.

#### RECAPITULATION

- 1519, AUGUST 10. Discovery of the Philippine Islands by Ferdinand Magellan.
- 1521, MARCH 18. The Spaniards made their first deal with the Filipino people.
- 1565 (?). Adoption of the sanitary code and establishment of the public dispensary, now called the San Juan de Dios Hospital.
- 1575-1580. The establishment of the first civil hospital was made during this term of Governor Francisco de Sande.
- 1603. Establishment of the first general hospital for all kinds of diseases by the Franciscan Order.
- 1611, APRIL. Foundation of the Santo Tomas University. The first medical graduates of this university were turned out in 1875.
- 1631. Establishment of the first special leper institution by the Franciscan Order.
- 1632. Establishment of the hospital (present San Lazaro Hospital) for the exclusive use of the native Filipinos.
- 1784. The San Lazaro estate was turned over to the Franciscan Order for the establishment of a leper institution.
- 1805. Creation of the Bureau of Vaccination.
- 1813, JUNE 23. Creation of the Board of Health for the City of Manila.
- 1854, NOVEMBER 5. Abolishment of the Manila Board of Health.
- 1855. Enactment of the first Maritime Quarantine Law.
- 1857-1860. Introduction of many general sanitary improvements in Manila.
- 1870. Establishment of the provincial and municipal boards of health.
- 1876, MARCH 31. Creation of the positions of health officers.
- 1882, JULY 21-25. Inauguration of the first waterworks system.
- 1883. Organization of the Superior Board of Health.
- 1888. Creation of the Office of Medical Inspector of Health and Charity for the Philippine Islands.
- 1892. The public health activities in the Philippines were entrusted to the Office of General Inspector of Health and Charity, a dependency of the Bureau of Civil Administration.
- 1898. General MacArthur reorganized the Board of Health for the City of Manila on September of this year.



- 1899, AUGUST 26. Abolishment of the Provisional Board of Health and creation of the Office of the Commissioner of Public Health. A plague hospital and a municipal dispensary were also established during this year.
1901. Promulgation of the first sanitary ordinance on April 6; establishment of the Board of Health for the Philippine Islands on July 1; establishment of provincial and municipal boards of health on December 2; and enactment of a law regulating the practice of medicine and surgery in the Philippines.
1903. Establishment of the Culion Leper Colony and enactment of the law regulating the practice of dentistry and pharmacy in the Philippines.
- 1905, OCTOBER 20. Passage of the Reorganization Act changing the Board of Health into Bureau of Health, under the Department of the Interior.
1906. Legislation regulating the establishment and maintenance of burial grounds and cemeteries on February 21; change of the provincial boards of health into health districts on July 1; incorporation of the sanitary code in the "Revised Ordinances for the City of Manila" on October 20; and construction of the sanitary sewer.
1907. Opening of the Philippine Medical School on January 10; enactment of the law authorizing the organization of municipal health districts on March 14; enactment of the "Pure Food and Drugs Act" on May 18; and enactment of the law providing anatomical material for the advancement of medical science.
- 1908, JUNE 18. Foundation of the University of the Philippines. The Philippine Medical School was merged with this University and became its College of Medicine and Surgery.
- 1909, MAY 20. Establishment of the Training School for Nurses.
- 1910, JULY 29. Organization of the Philippine Islands Antituberculosis Society; establishment of the Philippine General Hospital on September 10.
1911. Publication of the Bureau of Health Manual.
1912. Creation of a special committee to investigate the cause of excessive infant mortality in the Philippines; enactment of the law providing for the confinement of insane persons in government hospitals or other institutions for the insane; enactment of the law authorizing the organization of sanitary divisions.
1913. Publication of the "Handbook for Sanitary Inspectors" and creation of the committee to study the methods of improving the Health Service and its branches, including the General Hospital, the Bureau of Science and the College of Medicine and Pharmacy of the University of the Philippines. The provincial sanitary code was drawn this year.
1914. Establishment of the Public Health Service in the Department of Mindanao and Sulu; inauguration of the clean-up-week activity in the Philippines.
1915. Creation of the Public Welfare Board on February 5; on February 23, appropriation of ₱1,000,000 for the protection of early infancy, including the establishment of "Gotas de Leche"; on February 24, codification of all sanitary laws for inclusion in the Administrative Code;

on July 1, change of the Bureau of Health into Philippine Health Service, and creation of the Council of Hygiene.

1918. Establishment of the Santol Tuberculosis Sanatorium.

1921, FEBRUARY 24. Abolishment of the Public Welfare Board and creation of the Office of the Public Welfare Commissioner; fellowship granted to Filipino doctors and nurses by the Rockefeller Foundation, which continued until the year 1925; establishment of the Public Health Training School for Nurses.

1923, MARCH 19. Appropriation of ₱1,000,000 to be disbursed as insular aid for the establishment of provincial hospitals.

1924, NOVEMBER 24. Passage of the Philippine Health Service Retirement and Pension Act.

# APPENDICES

## APPENDIX A.—Estimated population of the Philippine Islands from 1903 to 1927, as of July 1st

Year	Christian population	Christian and non-Christian population	Year	Christian population	Christian and non-Christian population
1903.....	7,056,031	7,721,270	1926.....	9,006,312	9,896,074
1904.....	7,206,054	7,888,563	1917.....	9,156,332	10,063,866
1905.....	7,356,077	8,055,855	1918.....	9,306,860	10,230,661
1906.....	7,506,105	8,223,149	1919.....	9,456,872	10,398,029
1907.....	7,656,119	8,390,441	1920.....	9,606,892	10,566,040
1908.....	7,806,147	8,557,785	1921.....	9,756,414	10,734,053
1909.....	7,956,159	8,725,024	1922.....	9,906,440	10,902,081
1910.....	8,106,188	8,892,319	1923.....	10,056,457	11,070,306
1911.....	8,256,201	9,059,611	1924.....	10,206,480	11,238,593
1912.....	8,406,227	9,226,906	1925.....	10,356,502	11,406,875
1913.....	8,556,244	9,394,197	1926.....	10,506,525	11,575,176
1914.....	8,706,270	9,561,489	1927.....	10,656,545	11,744,172
1915.....	8,856,290	9,728,781			

## APPENDIX B.—Death, birth, and infant mortality rates in the Philippine Islands

Year	Estimated Christian population as of July 1	Deaths <sup>1</sup>	Death rate per 1,000 population	Births <sup>2</sup>	Birth rate per 1,000 population	Infant mortality	Infant mortality rate per 1,000 births
1904.....	5,524,875	146,921	26.59	216,087	39.11	48,492	224.40
1905.....	6,063,945	168,555	27.46	244,514	40.32	49,060	200.65
1906.....	6,119,408	143,284	23.57	214,465	35.05	41,045	191.38
1907.....	6,500,586	138,464	21.29	263,061	40.47	43,928	166.98
1908.....	6,549,845	190,495	29.08	244,933	37.39	49,023	200.14
1909.....	6,949,191	179,355	25.80	263,502	37.92	51,406	195.08
Total.....	31,182,975	818,153	26.24	1,230,475	39.46	234,462	190.545
Average.....	6,236,595	163,631		246,095		46,883	
1910.....	7,645,774	191,586	25.08	239,647	31.34	49,261	205.55
1911.....	7,825,505	188,412	24.07	302,594	38.67	58,744	194.13
1912.....	7,960,497	185,185	23.26	290,884	36.54	53,968	182.08
1913.....	8,186,201	154,094	18.82	308,907	37.12	46,472	152.91
1914.....	8,324,054	163,947	19.69	345,324	41.49	54,835	158.79
Total.....	39,942,031	883,224	22.11	1,482,356	37.11	263,277	213.963
Average.....	7,980,406	176,645		296,506		52,656	
1915.....	8,461,900	176,319	20.94	326,705	38.61	57,873	177.14
1916.....	8,769,035	190,430	21.71	308,595	35.19	57,297	185.66
1917.....	9,041,737	209,445	23.16	350,002	38.71	64,986	185.65
1918.....	9,187,759	360,980	35.28	341,833	37.15	89,625	262.28
1919.....	9,333,265	325,706	34.89	308,303	33.03	72,593	235.46
Total.....	44,794,196	1,262,880	28.19	1,634,938	36.50	342,374	209.41
Average.....	8,958,839	252,576		326,987		68,745	
1920.....	9,549,551	201,384	21.08	338,120	35.24	56,834	169.53
1921.....	9,707,183	204,528	21.06	343,287	35.36	60,711	176.85
1922.....	9,805,338	200,891	20.49	351,632	35.86	57,225	161.31
1923.....	10,056,457	204,066	20.29	385,778	38.26	56,904	147.50
1924.....	10,206,480	228,554	22.35	381,432	37.37	61,436	161.09
Total.....	49,325,009	1,039,423	21.07	1,800,249	36.50	293,110	162.816
Average.....	9,865,001	207,884		360,050		58,622	
1925.....	10,356,502	206,457	19.94	387,568	37.42	58,204	150.18
1926.....	10,506,525	230,011	21.89	400,488	38.12	62,770	156.74

<sup>1</sup> Population, number of deaths, births, and deaths of children under one year are based to provinces and municipalities which have submitted the report.

<sup>2</sup> Stillbirths not included.

**APPENDIX C.—Population, deaths, births with rates per 1,000 population, infant mortality and infant mortality rate per 1,000 births for the City of Manila, from 1900 to 1926.**

Year	Estimated population	Deaths <sup>1</sup>	Death rate per 1,000 population	Births <sup>2</sup>	Birth rate per 1,000 population	Infant mortality	Infant mortality rate per 1,000 births
1900	208,938	10,443	49.98				
1901	213,066	9,375	44.00	4,900	23.00		
1902	217,194	14,451	66.53	2,801	12.90		
1903	221,822	9,358	42.28	4,321	19.52		
1904	225,450	10,301	45.69	7,527	33.38	6,107	811.35
1905	229,578	8,741	38.08	8,018	34.92	4,179	521.20
1906	233,706	9,182	39.29	7,783	33.30	3,706	476.17
1907	237,834	7,287	30.64	7,899	33.21	3,104	392.96
1908	241,962	10,646	44.00	8,732	36.09	4,960	568.03
1909	246,090	7,936	32.25	8,776	35.66	3,894	443.71
Total	1,189,170	43,792		41,208		19,843	
Average	237,834	8,754	36.83	8,242	34.65	3,969	481.53
1910	250,218	8,029	32.09	9,694	38.74	4,279	441.41
1911	254,346	8,227	32.35	9,330	36.68	3,987	427.33
1912	258,474	7,819	30.25	9,142	35.37	3,597	393.46
1913	262,602	5,904	22.48	8,695	33.11	2,908	334.45
1914	266,730	6,587	24.70	9,599	35.99	3,325	346.39
Total	1,292,370	36,557		46,460		18,096	
Average	258,474	7,311	28.29	9,292	35.95	3,619	389.50
1915	270,858	6,820	25.18	8,850	32.67	3,511	396.72
1916	274,986	7,165	26.08	9,082	33.03	3,059	336.82
1917	279,114	6,682	23.94	8,883	31.82	2,447	275.47
1918	282,242	12,369	43.67	9,083	32.07	3,611	397.56
1919	287,370	7,814	27.19	10,029	34.90	2,256	224.95
Total	1,395,570	40,850		45,927		14,884	
Average	279,114	8,170	29.27	9,185	32.91	2,977	324.08
1920	291,498	7,667	26.30	12,614	43.27	2,687	213.02
1921	295,626	7,537	25.50	12,261	41.47	2,871	234.16
1922	299,754	7,221	24.09	13,092	43.68	2,543	194.24
1923	303,882	7,903	26.01	14,598	49.22	2,804	187.46
1924	308,010	8,297	26.94	13,969	45.35	2,733	195.65
Total	1,498,770	38,625		66,894		13,638	
Average	299,754	7,725	25.77	13,379	44.63	2,727	203.87
1925	312,138	7,450	23.87	15,046	48.20	2,513	167.02
1926	316,266	8,340	26.37	14,813	46.84	2,463	166.35

<sup>1</sup> Among residents only, stillbirths excluded, unless otherwise stated.

<sup>2</sup> Registration incomplete.

<sup>3</sup> Including transients and stillbirths (as per data available).

<sup>4</sup> From January to June, including transients and stillbirths, from July to November, only transients included, December residents only.

**APPENDIX D.—Total deaths from certain causes, with death rate per 100,000 population, in the Philippines**

Year	Population <sup>1</sup>	Cholera		Dysentery		Typhoid	
		Number	Rate	Number	Rate	Number	Rate
1906	5,061,377	6,067	119.86	8,812	174.10	2,349	46.89
1907	6,405,634	718	11.20	8,782	137.09	2,844	36.59
1908	6,436,420	17,770	276.08	12,215	189.77	2,582	40.10
1909	6,610,204	8,566	125.78	13,703	201.21	2,689	39.47
1910	7,328,481	7,202	99.50	18,295	249.64	2,689	39.47
1911	7,613,375	124	1.63	18,379	247.97	2,141	28.11
1912	7,817,126	0	0	20,302	258.72	2,391	30.46
1913	8,067,981	186	2.31	7,985	98.97	2,341	29.00
1914	8,315,129	2,347	28.57	6,702	81.58	2,464	29.99
1915	8,353,013	398	4.76	8,015	95.95	2,196	26.29
1916	8,492,407	8,235	96.97	7,755	91.32	2,599	30.59
1917	9,149,901	8,723	95.33	9,310	101.76	2,550	38.80
1918	9,314,445	5,924	63.60	11,360	121.96	4,395	47.20
1919	9,478,929	18,213	192.14	19,196	208.40	3,810	40.20
1920	9,627,450	1,194	12.40	9,196	95.52	2,848	29.59
1921	10,081,267	47	0.46	9,381	93.05	2,571	25.60
1922	10,547,349	72	0.63	7,913	75.02	2,029	19.24
1923	11,067,117	11	0.10	7,064	63.83	2,001	18.08
1924	11,234,415	26	0.23	8,460	73.70	1,922	16.77
1925	11,401,708	388	5.157	4,925	43.295	1,810	15.87
1926	11,568,994	238	2.057	9,339	80.724	1,503	12.992

<sup>1</sup> Summation of Christian and Non-Christian population of provinces reporting cases.

Year	Population <sup>1</sup>	Smallpox		Measles		Whooping cough	
		Number	Rate	Number	Rate	Number	Rate
1906	5,061,377	4,061	80.01	373	7.39	1,636	32.81
1907	6,405,634	3,026	47.24	727	11.35	1,920	29.97
1908	6,436,420	8,734	135.64	1,074	16.69	1,810	28.11
1909	6,610,204	6,237	91.56	766	11.24	1,756	25.73
1910	7,328,481	3,044	41.52	467	6.37	2,011	27.47
1911	7,613,375	1,192	15.65	506	6.64	2,721	35.72
1912	7,817,126	567	7.22	1,937	24.68	2,050	26.12
1913	8,067,981	903	11.19	1,394	17.27	2,154	26.69
1914	8,315,129	438	5.33	418	5.00	1,570	19.11
1915	8,353,013	276	3.30	608	7.28	2,039	24.41
1916	8,492,407	610	7.18	802	9.44	2,087	24.56
1917	9,149,901	436	4.77	1,028	11.20	2,344	25.62
1918	9,314,445	6,147	173.42	960	10.31	2,673	28.71
1919	9,478,929	40,971	527.19	314	3.31	1,616	17.06
1920	9,627,450	6,632	68.91	848	8.81	1,289	13.39
1921	10,081,267	728	7.22	3,338	33.11	1,980	19.64
1922	10,547,349	19	0.18	1,017	9.64	2,184	20.71
1923	11,067,117	4	0.04	536	4.84	995	8.99
1924	11,234,415	1	0.009	773	6.73	1,883	12.90
1925	11,401,708	1	0.009	423	3.710	1,120	9.323
1926	11,568,994	5	0.052	2,907	25.127	1,372	11.859

<sup>1</sup> Summation of Christian and non-Christian population of provinces reporting cases.

**APPENDIX E.—Total deaths from certain causes, with death rates per 100,000 population, in the Philippines**

Year	Population <sup>1</sup>	Diphtheria		Influenza		P. Tuberculosis	
		Number	Rates	Number	Rates	Number	Rates
1906	5,061,377	881	17.40	624	12.32	12,532	247.51
1907	6,405,634	1,005	15.68	578	9.02	12,802	199.84
1908	6,436,420	785	12.19	392	6.09	15,125	234.89
1909	6,610,204	840	12.33	450	6.61	15,294	224.52
1910	7,328,481	619	8.45	396	5.03	16,513	225.24
1911	7,613,375	595	7.82	489	6.42	17,799	233.89
1912	7,817,126	727	9.26	520	6.63	16,412	209.09
1913	8,067,981	585	7.26	683	8.46	16,078	199.21
1914	8,315,129	518	6.30	896	10.81	17,759	216.13
1915	8,363,013	603	7.22	1,273	15.24	18,317	219.25
1916	8,492,407	522	6.15	1,477	17.39	19,249	226.56
1917	9,149,901	645	7.05	1,608	17.56	21,104	230.67
1918	9,314,445	541	5.81	77,515	832.20	26,862	288.39
1919	9,478,929	489	5.16	7,629	80.48	26,644	281.09
1920	9,627,450	310	3.22	1,630	16.93	24,677	256.39
1921	10,081,267	237	2.35	2,131	21.14	24,913	247.11
1922	10,547,349	142	1.35	2,910	27.68	23,233	220.27
1923	11,067,117	170	1.61	3,739	33.78	26,927	243.30
1924	11,234,415	118	1.55	6,734	58.67	27,651	241.81
1925	11,401,708	98	0.865	5,098	44.712	26,803	236.490
1926	11,568,994	120	1.037	6,283	54.308	28,536	246.659

<sup>1</sup> Summation of Christian and Non-Christian population of provinces reporting cases.

Year	Population <sup>1</sup>	T.B. of other organs		Malaria		Beriberi	
		Number	Rates	Number	Rates	Number	Rates
1906	5,061,377	1,335	26.37	23,973	473.64	3,541	69.93
1907	6,405,634	1,743	27.21	22,610	352.97	1,752	27.35
1908	6,436,420	2,105	32.69	23,487	364.90	3,380	52.49
1909	6,610,204	2,290	33.62	25,751	378.12	3,620	53.14
1910	7,328,481	2,197	29.97	26,350	359.68	5,606	76.47
1911	7,613,375	2,181	28.62	28,181	370.15	6,009	78.89
1912	7,817,126	3,327	42.39	27,229	345.99	5,462	69.59
1913	8,067,981	2,314	28.67	18,526	229.62	8,023	49.84
1914	8,315,129	1,732	21.08	20,285	246.92	5,144	62.60
1915	8,363,013	1,632	19.44	24,826	297.21	5,516	66.03
1916	8,492,407	1,635	19.26	26,088	307.19	6,733	79.72
1917	9,149,901	1,745	19.17	29,074	317.75	7,953	86.93
1918	9,314,445	2,466	26.49	28,322	411.42	12,597	135.20
1919	9,478,929	3,009	31.74	37,726	398.00	12,387	130.68
1920	9,627,450	1,797	18.77	29,653	308.00	13,036	135.44
1921	10,081,267	1,935	10.19	28,407	281.78	15,847	157.19
1922	10,547,349	1,915	18.16	27,196	257.84	16,270	154.25
1923	11,067,117	1,726	15.60	24,142	218.14	18,100	163.55
1924	11,234,415	1,983	17.38	26,740	232.94	19,013	165.63
1925	11,401,708	2,261	19.909	24,329	313.389	18,542	162.624
1926	11,568,994	2,050	17.719	24,368	210.631	19,204	165.995

<sup>1</sup> Summation of Christian and Non-Christian population of provinces reporting cases.

**APPENDIX F**

**SEPTEMBER 29, 1899, TO AUGUST 25, 1899**

**FRANK S. BOURNS, Major and Chief Surgeon, United States volunteers; President, Board of Health for the City of Manila. (Provisional.)**

**AUGUST 26, 1899, TO DECEMBER 11, 1900**

**GUY L. EDIE, Major and Surgeon, United States volunteers; Commissioner of Public Health (Reorganized Board of Health), City of Manila.**

DECEMBER 12, 1900, TO JULY 25, 1901

FRANKLIN A. MEACHAM, Major and Surgeon, United States volunteers; President, Board of Health.

JULY 26, 1901, TO JULY 31, 1902

L. M. MAUS, Lieutenant-Colonel and Deputy Surgeon-General, United States Army; Commissioner of Public Health for the Philippine Islands.

AUGUST 1, 1902, TO AUGUST 31, 1902

FRANK S. BOURNS, Major and Chief Surgeon, United States volunteers; Commissioner of Public Health. (Temporary.)

SEPTEMBER 1, 1902, TO OCTOBER 31, 1905

E. C. CARTER, Major and Surgeon, United States Army; Commissioner of Public Health.

NOVEMBER 1, 1905, TO FEBRUARY 28, 1915

VICTOR G. HEISER, Passed Assistant Surgeon, U. S. P. H. and M. H. Service; Director of Health.

MARCH 1, 1915, TO DECEMBER 31, 1918

JOHN D. LONG, Surgeon, United States Public Health Service; Director of Health.

JANUARY 1, 1919, TO NOVEMBER 24, 1924

Acting till November 2, 1920

VICENTE DE JESUS SERAPIO, M.D., Director of Health.

NOV. 25, 1924, TO NOV. 24, 1928

JACOBO FAJARDO, Director of Health.

APPENDIX G.—*Statement of personnel of the Philippine Health Service*

Year	Medical officers	Nurses	Sanitary inspectors	Remarks
1915 <sup>1</sup> .....	81	104	12	Provincial employees excluded. No available record.
1916.....	73	35	34	Do.
1917.....	85	50	40	Do.
1918.....	75	60	64	Do.
1919.....				No data available.
1920.....	106	71	139	Provincial employees excluded. No available record.
1921.....	105	71	180	Do.
1922.....	121	84	159	Do.
1923.....	342	197	1,294	Complete.
1924.....	396	244	1,465	Do.
1925.....	426	276	1,389	Do.
1926.....	423	265	1,420	Do.

<sup>1</sup> Including the personnel of the Philippine General Hospital which was then under the Philippine Health Service.

**APPENDIX H.—Number of medical graduates turned out by the Santo Tomas University<sup>1</sup> and the University of the Philippines**

Year	Santo Tomas University	University of the Philippines	Total
1875.....	2		2
1876.....	0		0
1877.....	7		7
1878.....	4		4
1879.....	6		6
1880.....	6		6
1881.....	5		5
1882.....	3		3
1883.....	9		9
1884.....	8		8
1885.....	7		7
1886.....	5		5
1887.....	5		5
1888.....	6		6
1889.....	10		10
1890.....	20		20
1891.....	14		14
1892.....	11		11
1893.....	8		8
1894.....	9		9
1895.....	14		14
1896.....	6		6
1897.....	10		10
1898.....	32		32
1899.....	0		0
1900.....	0		0
1901.....	9		9
1902.....	25		25
1903.....	14		14
1904.....	18		18
1905.....	25		25
1906.....	12		12
1907.....	12		12
1908.....	24		24
1909.....	18	8	26
1910.....	16	12	28
1911.....	34	3	37
1912.....	54	9	63
1913.....	45	8	53
1914.....	29	9	38
1915.....	47	16	63
1916.....	35	5	40
1917.....	35	22	57
1918.....	48	23	71
1919.....	44	24	68
1920.....	57	28	85
1921.....	65	23	88
1922.....	61	25	86
1923.....	41	17	58
1924.....	44	11	55
1925.....	48	20	68
1926.....	64	29	93
1927.....	68	28	96
Total.....	1,199	320	1,519

<sup>1</sup> The Santo Tomas University was founded in April, 1611, and its College of Medicine was inaugurated in 1872.



**APPENDIX I.—Number of lepers collected from various parts of the  
Philippine Islands**

Year	Lepers	Remarks
1906.....	507	
1907.....	590	
1908.....	1,603	
1909.....	1,378	
1910.....	930	
1911.....	889	
1912.....	964	
1913.....	772	
1914.....	859	Excluding 23 lepers from Guam.
1915.....	555	
1916.....	966	
1917.....	613	
1918.....	971	Excluding 2 lepers from Guam
1919.....	547	Excluding 4 lepers from Guam
1920.....	604	
1921.....	514	
1922.....	819	
1923.....	733	Excluding 1 leper from Guam
1924.....	484	
1925.....	464	
1926.....	444	
Total.....	16,256	
Average.....	774.09	

**APPENDIX J.—Lepers in the Philippines**

Year	San Lazaro Hospital, Manila		Culion Leper Colony	
	Admitted	Sent to Culion	Admitted	Discharged as cured
1898.....	3			
1899.....	18			
1900.....	58			
1901.....	21			
1902.....	57			
1903.....	45			
1904.....	82			
1905.....	54			
1906.....	36		802	
1907.....	34		690	
1908.....	21		1,603	
1909.....	275		1,378	
1910.....	365		930	
1911.....	394		889	
1912.....	323		964	
1913.....	194		772	
1914.....	402		859	
1915.....	468		555	
1916.....	300		966	
1917.....	329	164	613	
1918.....	302	260	970	
1919.....	255	170	574	
1920.....	315	208	604	
1921.....	359	193	514	
1922.....	492	254	819	32
1923.....	386	146	732	76
1924.....	426	91	484	64
1925.....	438	96	464	172
1926.....	520	102	445	179
Totals.....	6,972	1,684	16,550	523

Readmission, transfers, and escapes not included.

The number of discharged as cured are the combined figures from San Lazaro Hospital and Culion Leper Colony.

The actual lepers in the Philippines as of October 1, 1927, is as follows:

Culion .....	5,098
Manila (San Lazaro Hospital).....	564
Cebu (treatment station).....	311
Other detention camps (provinces).....	81
Total .....	<u>6,054</u>

APPENDIX K.—*Health Finance*

Year	Insular aid		Provincial and municipal aid <sup>1</sup>
	Expenditures	Appropriations	
From July 1, 1905, to June 30, 1906.....	P834,409.02		
From July 1, 1907, to June 30, 1907.....	885,719.24		
From July 1, 1907, to June 30, 1908.....	950,893.57		
From July 1, 1908, to June 30, 1909.....	1,413,422.78		
From July 1, 1909, to June 30, 1910.....	1,472,211.45		
From July 1, 1910, to June 30, 1911.....	1,602,918.70		
From July 1, 1911, to June 30, 1912.....	1,614,329.02		
From July 1, 1912, to June 30, 1913.....	1,651,529.38		
From July 1, 1913, to December 31, 1913.....	849,756.59		
1914.....	1,176,334.94		
1915.....	1,165,357.83	P1,306,600.80	
1916.....	1,259,596.14	1,269,490.00	
1917.....	1,232,590.80	1,208,086.00	
1918.....	2,011,957.04	1,672,930.80	
1919.....	2,410,616.22	2,540,536.00	
1920.....	2,946,662.12	3,035,694.00	P1,068,194.46
1921.....	2,828,889.21	3,053,828.00	1,159,332.87
1922.....	2,815,925.04	2,950,012.00	1,231,089.15
1923.....	3,190,011.35	3,166,233.00	1,439,889.91
1924.....	3,229,274.13	3,208,813.00	1,302,726.33
1925.....	3,384,476.53	3,208,898.00	1,399,421.58
1926.....	3,440,269.17	3,279,238.00	1,380,232.89
1927.....		3,616,652.00	

<sup>1</sup> Data incomplete.APPENDIX L.—*Hospitals in the Philippines*

[November 1, 1927]

	Number	Bed capacity	Remark
<b>GOVERNMENT HOSPITALS</b>			
<b>UNDER THE PHILIPPINE HEALTH SERVICE</b>			
Manila.....	1	1,265	
Culion.....	1	350	
Provinces.....	30	917	
Total.....	32	2,682	
<b>UNDER THE DEPARTMENT OF THE INTERIOR</b>			
Manila.....	1	601	
Provinces.....	1	70	
Total.....	2	671	
<b>UNDER THE DEPARTMENT OF JUSTICE</b>			
Manila.....	1	300	
Provinces.....	2	65	
Total.....	3	365	
<b>UNDER THE PUBLIC WELFARE COMMISSIONER</b>			
Manila.....	1	26	
Provinces.....	6	55	
Total.....	7	81	

## APPENDIX L.—Hospitals in the Philippines—Continued

[November 1, 1927]

	Number	Bed capacity	Remark
SUMMARY OF GOVERNMENT HOSPITALS			
Manila.....	4	2,192	
Culion.....	1	500	
Provinces.....	39	1,107	
Total.....	44	3,799	
MILITARY HOSPITALS			
Manila.....	1	250	
Provinces.....	6	668	
Total.....	7	918	
PRIVATE HOSPITALS			
MISSION HOSPITALS			
Manila.....	5	456	Bed capacity of Leyte Mission Hospital and Sallie Long Read Hospital not included.
Provinces.....	14	499	
Total.....	19	955	
SOCIETY HOSPITALS			
Manila.....	1	70	
Provinces.....	3	290	
Total.....	4	360	
INDUSTRIAL HOSPITALS			
Manila.....	0	0	Bed capacity of Cadiz Saw Mission Hospital not included.
Provinces.....	4	92	
Total.....	4	92	
SUMMARY OF PRIVATE HOSPITALS			
Manila.....	6	526	
Provinces.....	21	881	
Total.....	27	1,407	
RECAPITULATION			
Manila.....	11	2,968	
Provinces.....	66	2,656	
Culion.....	1	500	
Total.....	78	6,124	

NOTE:—From the foregoing list, the Cebu Leper Detention Camp composing of several cottages with a combined capacity of 200 beds is not included. This Camp is at present used for the housing of positive lepers awaiting transportation to Culion.

## MISCELLANEOUS

---

### BATAAN

Two cases of suspected leper were examined by the undersigned (Dr. Martin Santiago) during the month. The first one was from Pilar as per request of the municipal president thereat to whom the patient presented himself; the second was from Mabatang, Abucay, as per request of the sanitary inspector thereat to whom he presented himself. After finding positive, sanitary inspectors Vicente B. Cruz and Clemente Carag were instructed to bring him with them in San Lazaro Hospital for confinement.

### BATANGAS

The health condition of the province was normal according to the health barometer.

### BULACAN

The general health condition of the province during the month has been found satisfactory.

### CAGAYAN

The most important works performed during the month were: Campaign against cholera and dysentery. Quarantine to infected houses and complete isolation to cholera cases, house-to-house inspection to detect new cases and at the same time to render service to sick persons, disinfection of premises and letrines, construction and destruction of old letrines, disinfection and destruction of surface old well, prohibition of sale of indigestible foods, compulsory use of boiled water for drinking purposes, general vaccination to the inhabitants, protection of goods against flies, and collection of specimen to detect cholera carrier.

### ILOILO

The most important work performed during the month was the conference with the members of the leper detention camp committee and the provincial governor, for the selection of an adequate site where to establish a leper detention camp. The raising of funds, therefore, was made so that after the selection of adequate site money will be available for the construction.

### LA UNION

The health condition of the district is good. The health index is 15.

### SAMAR

Three hundred thirteen school teachers were examined during the Normal Institute, under the request of the division superintendent of schools.

## LEPERS WILL HAVE HIGH SCHOOL IN SAN LAZARO BEGINNING JUNE

For the first time since the beginning of the American administration, a high school for lepers will be opened this June at the San Lazaro Hospital. The school is financed entirely by Filipinos and to Dr. Henry S. Townsend, dean of men and head of the department of philosophy of the University of the Philippines, belongs the honor of initiating the idea.

A freshman class will be opened, and possibly one for sophomores, also. The Director of Education has assured Dean Townsend that it can afford to pay the salary of the teacher. An instructor has already been found by Dr. Townsend. He says he is studying education in the National University.

About 20 students will form the freshman class. If Doctor Townsend's goal of ₱500 for books is oversubscribed more students will be admitted, he said.

## REST AFTER EVERY MEAL IS ADVICE OF THE BULLETIN OF HEALTH BUREAU

A rest after every meal is a boom to the human body. Scientific study has confirmed the common observation that mental or physical exertion interferes with digestion. The Philippine Health Service in making this announcement stated the following in its bulletin yesterday:

"Recent experiments in animals tend to show that heavy exercise affects the gastric secretion. It has been determined for instance that the secretion is not increased after food is taken and heavy exercise is undertaken at once. Heavy exercise of great muscular exertion immediately after meal, therefore, interferes with digestion. It is a physiological truism that wherever there is work, there the blood goes proportionately. It will therefore be seen how mental efforts or muscular work will obviously retard digestion by directing the blood to some other channel than the stomach where it is most needed.

"Rest after meals is a physiological necessity which must be observed if we desire to enjoy continued health. Thus experimentation confirms the common observation that heavy exercise interferes with digestion, and gives evidence to the statement that rest after every meal is beneficial."



## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of June, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1928<sup>1</sup> BY NATIONALITIES

Nationality	Population
Americans .....	8,184
Filipinos .....	298,265
Spaniards .....	1,955
Other Europeans .....	1,128
Chinese .....	17,856
All others .....	2,186
<b>Total</b> .....	<b>824,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo .....	81,785
2. San Nicolas .....	29,544
3. Binondo .....	17,852
<b>Total</b> .....	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz .....	52,911
5. Quiapo .....	16,066
6. San Miguel .....	4,491
7. Sampaloc .....	40,210
<b>Total</b> .....	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area .....	4,878
9. Intramuros .....	14,818
10. Ermita .....	16,847
11. Malate .....	16,683
12. Paco .....	16,244
13. Pandacan .....	5,937
14. Santa Ana .....	6,761
<b>Total</b> .....	<b>81,663</b>
<b>Grand total</b> .....	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, JUNE, 1928**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
	mm.	°C.	°C.		°C.		8 a. m. mean	2 p. m. mean
1-10 .....	757.24	28.0	35.1	7	24.2	10	31.2	31.4
11-20 .....	56.42	26.5	32.0	20	23.3	16	29.6	29.5
21-30 .....	57.24	26.9	32.2	30	22.9	24	29.9	30.1

Relative humidity					
Date		Mean	Daily mean maxi- mum	Day	Daily mean mini- mum
		Per cent	Per cent		Per cent
1-10 .....		80.0	84.2	3	74.4
11-20 .....		86.8	89.9	14	81.7
21-30 .....		82.4	87.1	28	78.9

Date	Prevailing direction	Wind			Atmidometer <sup>3</sup> (open air)		
		Velocity					
		Total	Daily total maxi- mum	Day	Total	Daily maxi- mum	Day
		Kms.	Kms.		mm.	mm.	
1-10 .....	E, quad.	1,925.5	338.0	4	35.8	5.5	4
11-20 .....	SW	2,698.5	478.0	13	14.0	2.7	20
21-30 .....	SW	2,052.0	366.5	22	27.1	4.1	22

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10 .....	53 05	7 45	7	52.2	7
11-20 .....	13 55	5 20	20	214.8	9
21-30 .....	43 55	8 15	26	68.0	8

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.



**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE  
CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	6	3	9	24.96
Filipinos.....	598	515	1,113	45.43
Spaniards.....	3	.....	3	18.68
Other Europeans.....	2	2	4	43.25
Chinese.....	29	32	61	41.59
All others.....	11	8	19	105.82
<b>Total and average.....</b>	<b>649</b>	<b>560</b>	<b>1,209</b>	<b>45.36</b>

**NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MENSIC:</b>							
1. Tondo.....	147	123	270	8	12	20	290
2. San Nicolas.....	36	27	63	1	4	5	68
3. Binondo.....	23	18	41	.....	1	1	42
<b>Total.....</b>	<b>206</b>	<b>168</b>	<b>374</b>	<b>9</b>	<b>17</b>	<b>26</b>	<b>400</b>
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	93	89	182	5	7	12	194
5. Quiapo.....	24	22	46	6	1	7	53
6. San Miguel.....	12	10	22	.....	.....	.....	22
7. Sampaloc.....	113	102	215	8	6	14	229
<b>Total.....</b>	<b>242</b>	<b>223</b>	<b>465</b>	<b>19</b>	<b>14</b>	<b>33</b>	<b>498</b>
<b>No. III, PACO:</b>							
8. Port Area.....	.....	.....	.....	.....	.....	.....	.....
9. Intramuros.....	15	12	27	1	.....	1	28
10. Ermita.....	42	23	65	1	3	4	69
11. Malate.....	56	53	109	4	2	6	115
12. Paco.....	24	24	48	4	.....	4	52
13. Pandacan.....	10	5	15	2	.....	2	17
14. Santa Ana.....	13	16	29	1	.....	1	30
<b>Total.....</b>	<b>160</b>	<b>133</b>	<b>293</b>	<b>13</b>	<b>5</b>	<b>18</b>	<b>311</b>
<b>Grand total.....</b>	<b>608</b>	<b>524</b>	<b>1,132</b>	<b>41</b>	<b>36</b>	<b>77</b>	<b>1,209</b>

Attended by physicians: living, 388; stillbirths, 24.

Attended by midwives: living, 123; stillbirths, 1.

Attended by families: living, 698; stillbirths, 15.

NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA

BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	1		1	3.88
Filipinos.....	322	317	639	26.08
Spaniards.....	2		2	12.45
Other Europeans.....				
Chinese.....	20	1	21	14.32
All others.....	4	1	5	27.85
Total and average.....	349	319	668	25.06

NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MERISIC:</b>			
1. Tondo.....	99	115	214
2. San Nicolas.....	38	16	54
3. Binondo.....	13	6	19
Total.....	150	137	287
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	46	51	97
5. Quiapo.....	16	9	25
6. San Miguel.....	4	7	11
7. Sampaloc.....	60	52	112
Total.....	126	119	245
<b>No. III, PACO:</b>			
8. Port Area.....			
9. Intramuros.....	11	10	21
10. Ermita.....	9	4	13
11. Malate.....	21	29	50
12. Paco.....	14	10	24
13. Pandacan.....	8	2	10
14. Santa Ana.....	10	8	18
Total.....	73	63	136
Grand total.....	349	319	668

# NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	128	88
Divorced.....	1	
Widowed.....	26	73
Single.....	264	192
Conditions not stated.....	3	1
Total.....	422	354
Grand total.....	776	

Stillbirths ..... 40

# NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	111	88	9	6	214
1 year plus.....	32	32	1		65
2 years plus.....	15	10	3	2	30
3 years plus.....	6	7	2	1	16
4 years plus.....	4	4	1		9
5 to 9 years.....	7	11	2		20
10 to 14 years.....	4	8	2	2	16
15 to 19 years.....	13	5	9	3	30
20 to 24 years.....	19	18	6	3	46
25 to 29 years.....	16	13	5	5	39
30 to 34 years.....	11	9	2		22
35 to 39 years.....	16	21	2	3	42
40 to 44 years.....	9	14	5	4	32
45 to 49 years.....	16	6	5	1	28
50 to 54 years.....	14	11	4	1	30
55 to 59 years.....	9	11	4	2	26
60 to 64 years.....	17	7	4	1	29
65 to 69 years.....	8	6	2		16
70 to 74 years.....	7	9	3		19
75 to 79 years.....	7	7	1		15
80 to 84 years.....	2	9	1		12
85 to 89 years.....	2	4			6
90 to 94 years.....	4	1		1	7
95 to 99 years.....		7			1
100 years and over.....		1			
Age not stated.....					
Total.....	349	319	73	35	776

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
1-42	I. Epidemic, endemic, and infectious diseases													
1	Typhoid and paratyphoid fever:													
	a. Typhoid fever.....			7	3							1		11
	b. Paratyphoid fever.....				1									1
5	Malaria:													
9	a. Malarial fever.....			1	1									1
	Whooping cough.....													
11	Influenza:													
	a. With pulmonary complications specified.....													
	b. Without pulmonary complications specified.....			4	2			1			2			8
16	Dysentery:													
	a. Amebic.....			1										1
	b. Bacillary.....				2									2
	c. Unspecified or due to other causes.....				2									2
21	Erysipelas.....													
29	Tetanus:													
	a. Umbilical.....			3	2									5
	b. Others.....													1
31	Tuberculosis of the respiratory system.....													
32	Tuberculosis of the meninges and central nervous system.....			71	78					1		2		152
33	Tuberculosis of the intestines and peritoneum.....			1										1
36	Tuberculosis of other organs:													
	b. Tuberculosis of the bones (vertebral column excepted).....			3										3
37	Disseminated tuberculosis:													
	a. Acute.....													
41	Purulent infection, septicemia.....			3	1					1				4
43-69	II. General diseases not included in Class I													
44	Cancer and other malignant tumors of the stomach, liver.....													
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....			2	2					1				5
46	Cancer and other malignant tumors of the female genital organs.....													
47	Cancer and other malignant tumors of the breast.....													
49	Cancer and other malignant tumors of other or unspecified organs.....			1	2									3
51	Acute rheumatic fever.....													













INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES BY SEX AND SMALL AGE GROUPS IN THE CITY  
OF MANILA, DURING THE MONTH OF JUNE, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Age at death under 1 month															
	Grand total		Under 1 day				1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days		Total under 1 month	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All causes.....	120	94	16	9	21	15	9	13	10	3	2	....	58	40		
COMMUNICABLE DISEASES:																
Typhoid and paratyphoid fever (1)																
Smallpox (6)																
Measles (7)																
Whooping-cough (9)	1															
Diphtheria (10)																
Influenza (11)		1														
Asiatic cholera (14)																
Dysentery (16)																
Meningococcus meningitis (24)																
Other epidemic and endemic diseases (25)																
Tetanus (29)																
Other infectious diseases (1-42) <sup>1</sup>	3	2			3	2	1								3	2
Beriberi (55)	2	2														
Diseases of the nervous system (70; 71; 80; 85)	18	12			1	3	1	1	2						4	4
Respiratory diseases (99; 100; 101; 107)	2	2														
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)	26	28			1		2	2							1	2
Congenital malformations (159)	9	7													2	2
Early infancy (160; 161; 162; 163)	1	1			1	1				2					1	1
All other causes (43-205) <sup>1</sup>	52	29	16	9	16	9	5	8	8	1	2		47	27		
	6	10						2					...	2		

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International list of causes of death.

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS  
IN THE CITY OF MANILA, DURING THE MONTH OF JUNE, 1928 (INCLUDING TRANSIENTS)—Continued

[Stillbirths not included]

323

Causes of death	Age at death under 1 year											
	1 month+		2 months+		3 months+		4 months+		5 months+		6 months+	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All causes.....	7	6	10	7	12	5	6	4	4	4	3	7
COMMUNICABLE DISEASES:												
Typhoid and paratyphoid fever (1).....												
Smallpox (6).....												
Measles (7).....												
Whooping cough (9).....					1							
Diphtheria (10).....												
Influenza (11).....												
Asiatic cholera (14).....												
Dysentery (16).....												
Meningococcus meningitis (24).....												
Other epidemic and endemic diseases (25).....												
Tetanus (29).....												
Other infectious diseases (1-42) <sup>1</sup> .....												
Beriberi (55).....	1	2	5	1	3		1	1	1	1	1	1
Diseases of the nervous system (70; 71; 80; 85).....												
Respiratory diseases (99; 100; 101; 107; 108; 109; 110; 111; 112; 113; 114; 115; 116; 127).....	3	2	2	2	1	2	5	2	2	2	2	2
Gastro-intestinal diseases (108; 109; 110; 111; 112; 113; 114; 115; 116; 127).....												
Congenital malformation (159).....												
Early infancy (160; 161; 162; 163).....	1	1	1	1	1				1	1		
All other causes (43-205) <sup>1</sup> .....	2	1	1	1	2	3			1	1	1	1
Total under 1 year.....	62	54	62	54	62	54	62	54	62	54	62	54

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set . . . . .	21,480
Number of rats caught by spring traps . . . . .	2,715
Number of cage wire traps set . . . . .	510
Number of rats caught by cage wire traps . . . . .	5
Number and kind of baits (coconuts) . . . . .	22,500
Number of poison portions placed . . . . .	22,350
Number of rats found poisoned . . . . .	412
Number of rats killed by clubs and other weapons . . . . .	1,139
Number of rats found dead from other causes . . . . .	435
Total number of rats otherwise caught, found dead or killed . . . . .	4,706
Total number of rats sent to the laboratory for examination . . . . .	4,706
Total number of rats found positive for plague . . . . .	0

---

TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF JUNE, 1928, CITY OF MANILA

325

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.	No. 1.....	1	2	1	.....	2	.....	3	1	2	1	2	3	2
	No. 2.....	1	.....	.....	.....	.....	.....	3	3	.....	.....	.....	3	3
	No. 3.....	3	.....	.....	2	2	1	1	3	1	1	1	4	1
	No. 4.....	5	1	.....	.....	.....	.....	5	2	1	1	6	2	
II.	No. 5.....	2	.....	.....	.....	.....	.....	2	1	.....	.....	.....	2	1
	No. 6.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.....	1	2	1	.....	.....	.....	1	1	2	1	3	2	
	No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
III.	No. 9.....	2	.....	.....	.....	.....	.....	2	2	.....	.....	.....	2	.....
	No. 10.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 11.....	1	.....	1	.....	.....	.....	1	1	1	1	1	1	1
	No. 12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 13.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....	15	6	6	3	2	2	1	1	17	8	7	4	24	12

REMARKS:

Cases confirmed as typhoid fever.....	22
Cases confirmed as paratyphoid fever.....	2
By autopsy.....	1
By blood culture.....	2
By Widal reaction.....	5
By urine examination.....	0
By feces examination.....	0
By clinical symptoms.....	16
Cases reported among nonresident persons not included in the table.....	23
Deaths reported among nonresident persons not included in the table.....	4
Typhoid carrier—None.	

**DYSENTERIES REPORTED DURING THE MONTH OF JUNE, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Grand total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I. { No. 1.....	?	.....	.....	.....	.....	.....	1	1	.....	.....	1	1	3	1
No. 2.....	2	1	.....	.....	.....	.....	1	1	.....	1	1	1	3	2
No. 3.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 4.....	1	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
II. { No. 5.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 6.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 7.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 8.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 9.....	1	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 10.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 11.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand total.....	7	1	4	1	.....	.....	3	3	7	1	7	4	14	5

**REMARKS:**

Amoebic dysentery.....

Bacillary dysentery.....

Unspecified.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Dysentery carrier—None.

2

7

5

13

6

CHOLERA REPORTED DURING THE MONTH OF JUNE, 1928, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I....	No. 1.....													
	No. 2.....													
	No. 3.....													
II....	No. 4.....													
	No. 5.....													
	No. 6.....													
	No. 7.....													
	No. 8.....													
	No. 9.....													
III....	No. 10.....													
	No. 11.....													
	No. 12.....													
	No. 13.....													
	No. 14.....													
Grand total.....														

REMARKS:

No nonresident case was reported during the month.

Cholera carrier—6

## DIPHTHERIA REPORTED DURING THE MONTH OF JUNE, 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female			
Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths			
I.	No. 1.		4						4		4			
	No. 2.		1					1		1				
	No. 3.													
II.	No. 4.	2												
	No. 5.							2			2			
	No. 6.													
III.	No. 7.													
	No. 8.													
	No. 9.													
IV.	No. 10.	1						1			1			
	No. 11.	1						1			1			
	No. 12.													
V.	No. 13.													
	No. 14.													
	Grand total.	4		5				4		5	9			

## REMARKS:

Cases reported among nonresident persons not included in the table.

Deaths reported among nonresident persons not included in the table.

Diphtheria carrier—1

7

2



**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF JUNE, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	14	6		1
Varicella.....	2	1		
Varioloid.....				
Smallpox.....				
Measles.....	3	4		
Whooping cough.....	1		1	
Influenza.....	17	6	7	4
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	169	157	74	78
Tuberculosis of other organs.....	8	5	5	5
Beriberi, infantile.....	12	10	12	10
Beriberi, adult.....		1		1

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	30	10	1	1
Varicella.....	1			
Varioloid.....				
Smallpox.....				
Measles.....		1		
Whooping cough.....				
Influenza.....	3			
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	29	17	7	5
Tuberculosis of other organs.....		1		1
Beriberi, infantile.....	6	1	6	1
Beriberi, adult.....				

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINE FOR THE  
MONTH OF JUNE, 1928**

Sera and vaccines	On hand June 1, 1928	Received during the month	Total to be accounted for	Distribut- ed during the month	Remaining at the end of the month
Anti-diphtheric serum (tubes).....	99	100	199	176	23
Anti-dysenteric serum (ampoules).....	33	1,000	1,033	935	98
Anti-tetanic serum (units).....	100,000	1,000,000	1,100,000	300,000	800,000
Cholera vaccine (c.c.).....	34,800	30,000	64,800	64,200	600
Dried vaccine virus (units).....	5,150	150,000	155,150	148,100	7,050
Dysenteric vaccine (c.c.).....	11,760	150,000	161,760	115,940	45,820
Fresh vaccine virus (units).....	115,700	100,000	215,700	167,800	47,900
Gonococcus vaccine (ampoules).....		51	51	51	
Mixed Typhoid Cholera vaccine (c.c.).....	107,640	114,000	221,640	173,820	47,820
Typhoid vaccine (c.c.).....	480	36,960	37,440	22,440	15,000



**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA  
DURING THE MONTH OF JUNE, 1928<sup>1</sup>**

Health districts	Municipal districts	First injections		Second injections		Total	
		V.	R.	V.	R.	V.	R.
No. 1.	{ Tondo.....	413		698		1,111	
	{ San Nicolas.....	13		25		38	
	{ Binondo.....						
No. 2.	{ Santa Cruz.....	578		374		952	
	{ Quiapo.....	3		4		7	
	{ San Miguel <sup>1</sup> .....						
	{ Sampaloc.....	1				10	
No. 3.	{ Port Area.....						
	{ Intramuros.....	27		3		30	
	{ Ermita.....	297		64		361	
	{ Malate.....						
	{ Paco.....	8		9		17	
	{ Pandacan.....						
Total	{ Santa Ana.....						
		1,349		1,177		2,526	

<sup>1</sup> "V", in persons never vaccinated before; "R", revaccinations.

## ANTI-TYPHOID AND ANTICHOLERA VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF JUNE, 1928:

Health districts	Municipal districts	Number of injections made in—												Total number of injections					
		Adults						Children						First		Second		Third	
		First injections		Second injections		Third injections		First injections		Second injections		Third injections							
		V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.	V.	R.
No. 1.	Tondo		1,816		1,189		717		512		425		294		2,328		1,614		1,011
	San Nicolas		817		686		524		480		323		280		1,297		1,009		804
	Binondo		1,040		836		730		503		413		364		1,543		1,249		1,094
	Santa Cruz		1,203		893		530		483		310		116		1,686		1,203		646
No. 2.	Quiapo		409		303		225		214		163		73		623		466		298
	San Miguel		525		463		314		247		150		97		772		613		411
	Sampaloc		1,651		806		503		283		213		163		1,934		1,019		666
	Port Area		440		365		230								440		365		230
No. 3.	Intramuros		153		29		15		2						155		29		15
	Ermita		1,510		1,081		515		312		240		190		1,822		1,321		705
	Malate		506		324		254		192		102		83		698		426		337
	Paco		314		289		183		184		75		56		498		364		239
	Pandacan		325		236		199		114		98		63		439		334		262
	Santa Ana		308		292		189		79		56		47		387		348		236
	Total		11,017		7,792		5,128		3,605		2,568		1,826		14,622		10,360		6,954

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injections.

"V", in persons never vaccinated before; "R", revaccinations.

**CONSOLIDATED REPORT OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1928**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	6,610	1,138	1,819	3,653
Agusan.....	2,105	649	623	833
Albay.....	22,666	6,236	5,098	11,332
Antique.....	13,177	3,978	5,801	3,398
Bataan.....	5,548	2,255	803	2,490
Batanes.....	320	76	85	159
Batangas.....	28,843	8,881	7,353	12,609
Bohol.....	32,012	10,483	8,931	12,998
Bukidnon.....	4,649	1,857	643	2,149
Bulacan.....	19,864	6,977	6,557	6,330
Cagayan.....	48,857	9,984	32,467	6,406
Camarines Norte.....	4,812	1,578	2,038	1,196
Camarines Sur.....	6,385	1,552	1,429	3,404
Capiz.....	19,064	5,375	6,988	6,701
Catanduanes.....	24,373	2,487	9,950	11,936
Cavite.....	72,768	4,416	61,606	6,741
Cebu.....	56,090	16,442	8,733	30,915
Cotabato.....	12,428	3,742	3,811	4,875
Davao.....	19,060	7,272	6,703	5,085
Ilocos Norte.....	71,426	4,432	54,329	12,665
Ilocos Sur.....	15,753	4,337	8,679	2,737
Iloilo.....	74,450	24,443	10,610	39,797
Isabela.....	9,869	2,457	5,698	1,714
Laguna.....	65,822	7,427	50,461	8,334
Lanao.....	10,986	4,271	4,181	2,534
La Union.....	13,839	2,811	379	10,649
Leyte.....	61,669	18,250	23,958	19,461
Marinduque.....	4,420	1,010	2,217	1,193
Masbate.....	44,580	5,531	29,532	9,517
Mindoro.....	2,814	691	648	1,475
Misamis.....	14,214	4,813	1,208	8,193
Mountain Province.....	16,445	4,006	5,461	6,978
Nueva Ecija.....	21,560	7,975	2,708	10,877
Nueva Vizcaya.....	3,012	737	473	1,802
Occidental Negros.....	49,955	15,645	22,783	11,527
Oriental Negros.....	21,742	7,496	4,893	9,353
Palawan.....	213	69	66	78
Pampanga.....	16,170	6,209	8,785	1,176
Pangasinan.....	46,299	14,441	9,140	22,718
Rizal.....	14,840	4,395	6,702	3,743
Romblon.....	4,428	1,243	1,276	1,909
Samar.....	29,115	6,303	7,854	14,958
Sorsogon.....	13,434	3,383	269	9,782
Sulu.....	13,562	5,091	4,616	3,855
Surigao.....	3,239	982	484	1,823
Tarlac.....	14,205	3,779	7,528	2,898
Tayabas.....	18,920	8,254	2,681	7,985
Zambales.....	5,597	1,793	625	3,179
Zamboanga.....	6,446	2,916	964	2,566
Total.....	1,088,700	269,368	450,646	368,686

**CONSOLIDATED REPORT OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1928** <sup>1</sup>—Continued

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	586	264	1,208	890	998	1,850	2,792	3,004
Agusan.....	82	84	200	288	387	217	669	589
Albay.....	3,267	1,254	3,055	1,065	3,132	2,371	9,454	4,690
Antique.....	1,271	411	1,590	784	1,447	1,696	4,308	2,891
Bataan.....	1,476	235	1,561	528	617	287	3,654	1,050
Batanes.....	41	20	72	40	69	38	182	98
Batangas.....	4,280	1,070	6,298	2,825	4,443	4,516	15,021	8,411
Bohol.....	3,276	1,445	5,075	2,792	7,620	6,954	15,971	11,191
Bukidnon.....	143	101	353	397	988	1,136	1,434	1,634
Bulacan.....	4,260	1,121	3,857	1,880	3,130	2,719	11,247	5,720
Cagayan.....	2,707	667	4,666	1,645	10,751	13,339	18,124	15,651
Camarines Norte.....	891	257	1,506	450	793	382	3,191	1,089
Camarines Sur.....	874	344	1,266	407	1,862	893	4,002	1,644
Capiz.....	1,836	436	2,376	1,101	5,426	2,766	9,638	4,303
Catanduanes.....	1,654	862	2,592	1,198	5,081	4,533	9,327	6,593
Cavite.....	2,694	1,615	4,293	3,610	16,373	22,174	23,360	27,399
Cebu.....	5,634	2,449	6,616	3,352	6,522	8,306	18,772	14,107
Cotabato.....	426	232	924	581	2,666	1,734	4,016	2,547
Davao.....	719	275	1,693	874	5,026	4,050	7,438	5,199
Ilocos Norte.....	2,777	1,282	7,711	3,534	22,545	29,031	33,033	24,847
Ilocos Sur.....	1,868	962	2,900	1,549	2,783	2,437	7,551	4,948
Iloilo.....	5,502	1,716	10,311	4,180	15,517	21,056	31,330	26,952
Isabela.....	1,333	444	1,595	576	2,209	1,271	5,137	2,291
Laguna.....	2,174	1,637	3,509	3,382	11,043	21,781	16,726	26,800
Lanao.....	592	300	804	716	1,568	2,218	2,964	3,234
La Union.....	1,691	804	2,427	2,260	1,721	2,729	5,839	5,793
Leyte.....	2,311	630	8,110	2,135	15,711	11,202	26,132	13,967
Marinduque.....	532	188	277	137	598	1,209	1,407	1,534
Masbate.....	1,220	218	3,875	946	14,296	7,283	19,391	8,447
Mindoro.....	243	65	284	130	643	551	1,170	746
Misamis.....	805	409	1,267	661	2,072	1,405	4,144	2,475
Mountain Province.....	224	75	961	516	2,872	2,213	4,057	2,804
Nueva Ecija.....	2,732	1,345	4,827	2,422	3,147	3,381	10,706	7,148
Nueva Vizcaya.....	442	208	236	283	590	1,062	1,268	1,553
Occidental Negros.....	3,356	731	6,711	1,953	10,546	8,642	20,613	11,326
Oriental Negros.....	3,297	986	4,167	1,795	4,245	2,796	11,709	5,577
Palawan.....	1	1	3	2	159	18	163	21
Pampanga.....	1,872	1,045	1,500	802	568	732	3,940	2,579
Pangasinan.....	7,083	2,232	8,630	3,105	8,362	8,209	24,175	13,546
Rizal.....	2,286	1,133	844	912	1,894	3,125	5,024	5,170
Romblon.....	664	251	831	261	1,101	586	2,596	1,093
Samar.....	1,867	610	2,765	1,785	5,351	4,336	9,483	6,731
Sorsogon.....	848	391	1,691	708	4,734	2,187	7,273	3,286
Sulu.....	506	288	1,748	1,014	1,766	2,267	4,020	3,569
Surigao.....	303	108	298	159	975	815	1,576	1,182
Tarlac.....	993	707	2,140	1,735	1,571	3,043	4,704	5,485
Tayabas.....	2,812	1,813	4,078	2,062	3,122	2,978	10,012	6,853
Zambales.....	543	463	661	975	730	1,181	1,934	2,619
Zamboanga.....	358	264	751	683	1,008	1,325	2,117	2,272
Total.....	86,852	34,448	135,113	66,85	220,728	222,030	442,693	322,563

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by Vaccinating Parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Total
Abra.....	719	454	1,173
Agusan.....	647	196	843
Albay.....	291	215	506
Bukidnon.....	379	185	564
Bulacan.....	206	106	312
Camarines Sur.....	2,034	905	2,939
Capiz.....	348	113	461
Iloilo.....	4,514	1,447	5,961
Laguna.....	934	559	1,493
La Union.....	5,280	3,110	8,390
Masbate.....	386		386
Mindoro.....	160	21	181
Miramis.....	31	21	52
Mountain Province.....	1,607	369	1,976
Pampanga.....	741	110	851
Romblon.....	2,068	2,453	4,521
Tarlac.....	343	79	422
Tayabas.....	505	299	804
Total.....	21,193	10,642	31,835

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	354	118		472
Albay.....	6,838	1,783	107	8,728
Antique.....	2,057	1,217		3,274
Bataan.....	73			73
Batangas.....	562	253		815
Bulacan.....	28	690		718
Camarines Sur.....	3,901	52		3,953
Capiz.....	46	46		92
Catanduanes.....	253	33		286
Iloilo.....	222	85		307
Laguna.....	464	188	5	657
Leyte.....	565	75		640
Nueva Ecija.....	285	99		384
Pampanga.....	761			761
Pangasinan.....	4,206	3,203		7,409
Rizal.....	22,077	6,833		28,910
Romblon.....	808	209		1,017
Samar.....	568	130		698
Sorsogon.....	1,855	362		2,217
Tarlac.....	1,388	329		1,717
Total.....	47,311	15,705	112	63,128

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	93	48	41	182
Batangas.....	57	41		98
Bukidnon.....	145	72		217
Bulacan.....	445	454	58	957
Camarines Sur.....	36			36
Iloilo.....		120		120
Laguna.....	3,166	2,220	963	6,349
Mindoro.....	340	30		370
Pampanga.....	6	6		12
Pangasinan.....	684	291	47	1,022
Rizal.....	1,754	644	168	2,566
Tarlac.....	1,098	286	3	1,387
Total.....	7,824	4,212	1,280	13,316

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	2,276	1,575		3,851
Agusan.....	2,637	1,381		4,018
Antique.....	1,907	702		2,609
Bataan.....	10,241	8,247		18,488
Batanes.....	599	560		1,159
Batangas.....	2,324	1,664		3,988
Bohol.....	871	873		1,744
Bukidnon.....	432	502		934
Bulacan.....	27	27		54
Cagayan.....	322	201		523
Camarines Norte.....	3,765	3,360		7,125
Camarines Sur.....	256	61		317
Capiz.....	79	132		211
Cavite.....	40,631	40,621		81,252
Cebu.....	3,590	1,075		4,665
Cotabato.....	192			192
Davao.....	1,358	646		2,004
Ilocos Sur.....	1,161	755	46	1,962
Iloilo.....	10,648	4,237		14,885
Isabela.....	46	37		83
Laguna.....	485	366		851
Lanao.....	5,045	2,234		7,279
La Union.....	7,946	5,259		13,205
Leyte.....	583	228		811
Marinduque.....	2,595	1,575		4,170
Masbate.....	363	13		376
Mindoro.....	737	430		1,167
Misamis.....	2,803	651		3,454
Mountain Province.....	1,632	97		1,729
Nueva Ecija.....	1,223	1,228		2,451
Nueva Vizcaya.....	784	723		1,507
Occidental Negros.....	7,471	3,474		10,945
Oriental Negros.....	1,534	1,242		2,776
Pampanga.....	8,880	4,359		13,239
Pangasinan.....	7,671	5,105		12,776
Rizal.....	888	1,058		1,946
Samar.....	985	419		1,404
Sulu.....	30			30
Tarlac.....	1,773	1,121		2,894
Tayabas.....	6,959	3,557		10,516
Zambales.....	3,964	3,281		7,245
Zamboanga.....	6,908	1,901		8,809
Total.....	226,621	104,977	46	331,644

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF JUNE, 1928**

No case and no death reported during the month.

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF JUNE, 1928**

Province and towns	Cases	Deaths
Cagayan:		
Pamplona.....	1	1
Sanchez-Mira.....	7	4
Total.....	8	5



**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF JUNE, 1928**

Sanitary orders	Health districts			
	No. 1 Meisic	No. 2 Sampa- loc	No. 3 Paco	Total
Orders pending, June 1, 1928:				
Minor .....	117	99	240	456
Sewer .....	26	48	4	78
Vacating .....	8	9		17
Filling .....	24	43	22	89
Total .....	175	199	266	640
Orders issued during the month:				
Minor .....	10	8	59	77
Sewer .....		4		4
Vacating .....				
Filling .....				
Total .....	10	12	59	81
Orders completed during the month:				
Minor .....	2	4		6
Sewer .....	2			2
Vacating .....				
Filling .....			1	1
Total .....	4	4	1	9
Orders cancelled during the month:				
Minor .....			49	49
Sewer .....				
Vacating .....				
Filling .....				
Total .....			49	49
Orders pending, June 30, 1928:				
Minor .....	125	103	250	478
Sewer .....	24	52	4	80
Vacating .....	8	9		17
Filling .....	24	43	21	88
Total .....	181	207	275	663
Strong material plans approved:				
New buildings including additions and alterations. ....	37	47	36	120
Permits for minor building constructions:				
Approved .....	47	54	31	132
Disapproved .....	7	11	2	20
New buildings completed .....	13	26	26	65
Permits for light and mixed material constructions:				
Approved .....	12	44	33	89
Disapproved .....	11	13	12	36
Prosecutions:				
Convictions .....	1			1
Dismissals .....				
Amount of fines .....	P10.00			P10.00
Plumbing permits issued .....	45	93	64	202
Plumbing projects completed .....	29	43	31	103
Premises connected to the sanitary sewer to May 31, 1928 .....	2,558	4,387	785	7,730
Connected during the month .....	4	5	2	11
Total .....	2,562	4,392	787	7,741

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.



THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

JULY, 1928

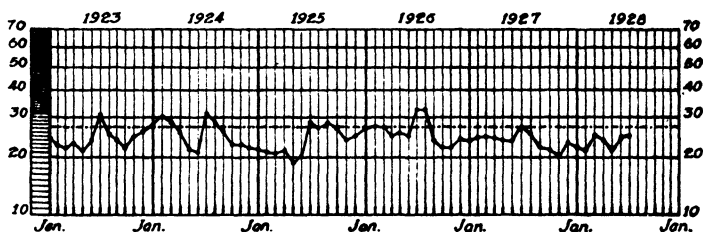
No. 7

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY of MANILA*



*----- Average death rate for the last five years.*

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
LEONCIO LOPEZ-RIZAL, M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Preliminary Report of the Yaws Campaign in the Province of Cotabato, by Drs. G. ROQUE and M. CUERPOCRUZ.....	341
The Rôle of the Nursing Profession in the Progress of the Philippines .....	351
A tentative Plan for School Health Program and Organization in the Philippines, by Drs. J. S. FERNANDO, C. LIMJOCO, E. MADRID, F. ESTELLA, E. A. FABIE, and F. MEDALLE.....	354
Eradication of Leprosy .....	360
Miscellaneous .....	561
General Statistics .....	363
340	

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**JULY, 1928**

**No. 7**

**PRELIMINARY REPORT OF THE YAWS CAMPAIGN IN  
THE PROVINCE OF COTABATO**

**By Drs. G. ROQUE and M. CUERPOCRUZ**

The object of this campaign is to try to eradicate yaws in the Province of Cotabato by the use of neo-salvarsan, so that this report cannot be expected to be an exhaustive scientific treatise of this disease but rather more of field experiences in the treatment of yaws and our impressions on this malady gained during this campaign.

Cotabato is the largest province of the Islands and its river the longest, the course of which seems to be followed by yaws for it appears to us to be more common along its bank than in mountainous regions and even along the coast. Thus it is common knowledge in the province what we seldom see in Tirurays, Tagabilis, Bilanes, Manobos, and Bagobos with yaws. This impression is in some way against that of Doctor Gutierrez, chief of the venereal clinic of our service in his report on the eradication of yaws in the town of Parañaque but seems to agree with Stitt who says that yaws very rarely attacks people living in places more than a thousand feet above sea level. It looks that he is of the opinion that since yaws is exclusively a tropical and subtropical disease the climate in high places is not favorable for it. We confess to be not in a position to offer any other accurate explanation to this finding unless we assume that the fresh water of the Cotabato River, which the inhabitants, mostly Moros use, frequently acts as conveyor of this disease although one thing is against this speculative view. The Moros

as you probably know have the practice of always washing their privates after defecating and urinating. They do this in the water where they bathe so that we could expect their mother yaws to grow around the anus or genitals which expectation is contrary to our findings as we met the disease usually begin extragenitally. We should not forget though to tell you that some inhabitants of the mountainous regions above-mentioned do not live in crowds which fact may be contributory to the rarity of yaws among them. As to those living along the coast we can probably say the water here is much greater in quantity constantly changing and is salty.

In this campaign we should say that we have practically just begun although we have treated nearly two thousand patients already since May of this year. The patients that have come to our clinic are only those living in the municipality of Cotabato and its vicinity, those in the interior where the disease is common, we have not seen yet. Remember that as we have said Cotabato is the largest province of the islands and to show how prevalent yaws is, the Moros consider it as measles and that they cannot escape it in their lives, which belief is not too surprising in comparison with that of the natives of the French Congo who according to Clapier consider the eruption of yaws in the younger generation as natural as the eruption of teeth. They have not gone through as far as to inoculate this disease their children which practice according to Daniels is done in Fiji.

You might be interested to know the remedy the natives have been using for this disease. What they do, is to give a preliminary bath of decoction of guaga leaves which removes the crust and acts as astringent to the exposed raw surface. After this they apply to the lesions lemon juice heated on a piece of iron or even bolo. They sometimes add salt to the lemon juice or even soot that adheres to the back of an iron frying pan. They claim good result after about three to six months of this treatment in some cases.

Before this campaign we tried to use Castellani's formula aided by protoidie of mercury with poor result. We pushed this kind of treatment for about two months period and the lesions improved but new lesions invariably soon developed, and so we gave it up.

To many Moros in Cotabato the almost miraculous effect of neo-salvarsan in curing yaws is not new, for several years ago they have heard and seen this treatment, so that, they had been

impatiently waiting for the time when the Government could give it free to all who need it and now, that we are in such a position they come "like bees for honey," even the most recalcitrant "datus," "Hadjis," and "panditas." If we might be allowed to digress a little let us mention here the case of Datu Alamada who is at present a Moro leader on the part of the Government for the negotiation of the surrender of Datu Santiago the principal protagonist as a villain in the now all known Bugsasan Tragedy. This Datu Alamada somewhere in about 1917 was also a dangerous outlaw and the success of the then Governor Carpenter in making this man surrender and be a peaceful law-abiding citizen was partly due if not principally to this wonderful effect of neo-salvarsan on yaws, for at that time this brave "datu" was having plenty of secondary lesions and was treated and cured to his great satisfaction by Dr. Liborio Gomez with this drug, although it cost the Government that time about ₱70 for the medicine alone.

We have now good opportunity to study this disease were it not that our personnel is very limited. In this wide province of a population of about 190,000 widely scattered, we have a general hospital in the capital and seventeen dispensaries outside. In the hospital we have one supervising surgeon, who is at the same time the district health officer for the province. He frequently inspects the dispensaries which are separated widely obliging him to be most of the time absent from the hospital. After him we have a resident physician who is at the same time the municipal health officer of the capital. We practically have only four nurses and some clerks and attendants. With this personnel we run the hospital with an average of 18 patients a day having general diseases; hold daily consultation, attend to our hospital dispensary, answer medical and obstetrical outside calls, guard the public health and carry on this campaign.

Our yaws clinic is on Thursday of every week. In the early morning yet, you will see patients flocking into the hospital very eager to receive the injections, but very eager also to go away after getting the medicine and even escape if we try to detain them for observation. We have succeeded more or less in detaining children under two years until they are free of any possible serious reaction. There are times when we can give one hundred fifty injections in one morning, but our average is sixty-three per clinic. No preparation nor detailed examination of the patients before the injection is made, although we

wish, for lack of time. We are using the syringe method with the patient in the dorsal position, altho the circular for this campaign prefers the gravity method. It seems that the former is faster, for with it we do not have much trouble in ascertaining whether the needle is already inside the vein or not by just aspirating a little and see the column of blood rush into the syringe. The injection is made slowly as the circular advises, but when we are pressed in time we are forced to inject fast much faster than is proper. We have even injected bubbles to our much worry, but are surprised to see no bad result after a considerable length of time of observation. At first we have been very careful in giving the proper dosage for the weight of the patient, but finding this consumed much time we have made it a routine to give 30 centigrams to every one above 10 years old, 20 centigrams for those above 2 years old and 15 centigrams for those below 2 years. We have not had real nitritoid crisis and have not seen any Herxheimer's reaction but we are sorry to have to admit one serious late ill-effect of the drug which will be dealt with somewhere in this paper.

#### PREVALENCE AND CONTAGION

It is very prevalent among the non-Christian natives of the province and we think we can state safely that almost all of the Mohammedans had it during their childhood, or adolescence thus, as we mentioned above, they consider it like measles.

They call it "bacatao" meaning an ulcer that may become big, and is known by them to be highly contagious and put it like this: "Let your children pay with those having yaws and they will surely have it." As to whether simple skin contact suffice to transmit the disease we have no available data, but we are of the opinion that skin abrasions are necessary, for our observation and inquiry reveal that the primary lesions usually occur on the extremities oftener on the leg than on the hand, and sometimes on chest and abdomen. Besides these findings, there seems to be a predilection for the anterior surface of the body and also to extent of the extremities, thus suggesting the possibility of minor trauma causing abrasions, as a factor in the transmission. Needless to say, as probably you know already, these people are very unsanitary living communally in their dirty shacks with plenty of flies around.

No case that is congenital was found, and we believe with others that it is not really hereditary. No age is exempt, but usually it occurs before poverty and one attack seems to confer immunity. Both sexes are equally attacked.



We come now to the description of the manifestations of this disease and while we do not claim originality yet we tried in it to reconcile opinions of some authorities with our own little experience.

### PRIMARY LESION

The incubation period is variable and is said to be from one week to three months. The primary lesion may appear as an isolated papule or bulla which becomes moist and then covered by a yellow crust after several days. On removing the crust an undermined ulcer with a ray base is exposed. It is always extragenital and may be so small and escape detection, or be confused with other skin diseases. There may be slight general symptom of malaise or fever specially in children.

This primary lesion is often still present when the secondaries appear and may even become infected ulcer, and remain so for several years. We have already said that they often occur on the anterior aspect of the body and extremities but very rarely on the back. We are frank to say that we have not seen primary lesion in formation; we were met already with well developed disease.

### SECONDARY LESIONS

Of the forms of these lesions we have seen the macular, papular, the typical yaws, palmar and plantar yaw, and the ring-worm yaw. The lesions appear all over the body, but seem to respect somewhat the scalp, and is usually accompanied or preceded by systematic symptoms, which the natives say are more severe in the adults than in children. These symptoms vary in severity and consist of fever, malaise, and rheumatic pains. In children besides the fever and etc., gastric disturbances are common. The development of the eruption is preceded and attended by much itching.

After about one to three months from the appearance of the primary lesion, but sometimes shorter, the secondaries appear and develop in about two weeks ushered first by furfucacious desquamation in small circular, oval, irregular, in rings or confluent patches or macules. This desquamation may be very slight or marked and may persist during the development of the secondaries or even longer and so in our opinion makes the macular form described by some.

On these macules papyles usually appear which according to Nicholls are pushed up from the rete Malpighii through the horny epidermis which in turn breaks at the summits of the papules and splits in radiating lines from the center giving

ways for the growing papyles. Soon on the top of each papule a yellow point appears consisting of cheesy looking substance which is adherent. The papules now may cease to grow and again to our opinion make the papular form, but they usually continue into the characteristic yaw from which this disease gets one of its name—framboesia or raspberry.

In the later case, these papules become rounded excrescence, the yellow material widening and forms complete caps for the now tumour-like lesions. The size and shape of these lesions vary; the small ones about one centimeter in diameter and are hemispherical, the larger one flattened or even depressed with everted somewhat overhanging edges. On removing the crust a clean ulcer is exposed with rounded raw surface on which are minute points of bleeding. Pale yellow serum exudes from this surface which forms again the characteristic dirty yellow crust on drying. Then, after a considerable length of time, sometimes months, the crusts become thin, shrink, darken, separate at the periphery and fall off leaving pale spots, not scars unless the ulcers had become secondarily infected by pyogenic bacteria. Thus we have described a crop of these lesions. There may be several crops one following each other or overlapping in time. Sometimes one or several secondary lesions may exist for years and be present with the tertiary lesions.

#### **PALMAR AND PLANTAR FORM**

This form is nothing different from the forms described above except for the peculiar influence of the thick skin of the palm and sole. The macular form on these patches is the same as that in other parts of the body, but the development of the papules and yaws is much delayed and causes much pain and suffering due to the unyielding thick skin. After the splitting of the skin the pain is relieved, but the patients who are mostly barefooted have hard time in walking. We have treated also cases of secondary lesions occurring around the nails stimulating onychia.

#### **RINGWORM YAW**

We have seen this form in several cases. The lesion is macular inside with a single raw of pink rather indurated papules advancing on the periphery and tending to leave at the center of healthy skin. This lesion seems to be late secondaries.

### TERTIARY LESIONS

These usually appear when the secondaries are gone and the most common manifestation we have seen is keratosis of the palm and sole. Next come the bone lesion and gammata.

#### KERATOSIS

Keratosis may appear but a few years after the disappearance of the secondaries although usually much later. Many of the patients having this form are adults having had yaws during their childhood. It may be manifested in form of worm-eaten sole and palm, the small holes or pits being painful. Usually what happens is that the skin becomes hypertrophied, brittle, exfoliates and forms fissures easily. These fissures go deep into the subcutaneous tissue and torture its victim with pain. This is very disabling, especially among barefooted people who compose most of the patients and in order to relieve them we were forced to treat this form although it does not look like contagious.

#### BONE LESIONS

These may manifest first as chronic periostitis or nodules under the periosteum, the skin over which nodules or swellings is tense and stretched, hot to the touch and exquisitely tender. Sometimes these nodules break down leaving indolent ulcer and may be followed by necrosis of bones. When this occurs near the joints about the elbows, knees, hips, and ankles ankylosis and contraction cause serious disabling deformities. Diffuse infiltration may cause bowing of the tibia and sometimes also of ulna. In the long bones of the hands and feet the process is central and fusiform enlargement is common. Here necrosis of the phalanges also causes much deformity.

Although the long bones seem to be more prone to be attacked the bones of the nose and palate are exceptions where the hideous "gangosa" which is common develops. The process may even creep into the maxillary sinus and break through the cheek bones outside.

#### GUMMATA

The skin, subcutaneous tissues, and fascia are mostly affected. The infiltration may be observed after months of existence and be fibrous forming hard fibroma-like tumor suggestive of those so called juxta-articular nodules, or it may break down leaving

clean cut ulcer usually covered by yellow scab similar to that of the secondaries. The so called serpeginous or lupoid ulceration begins from this ulcer by the process of spreading, going on at one end while the process of healing works at the other. This is a slow process and may go on for years with the scarring and contractions crippling the patient.

Periarticular inflammation, synovitis and tendosynovitis were seen. The last was met in form of a compound ganglion on the dorsum of the wrist. We operated on two of these cases and apparently got well, but recurred after a few months while one injection of neo-salvarsan cured them and have not come back until now. We have not seen this form described in our limited literature.

As to the occurrence of nervous involvement we are not positive yet although we have seen suspicious cases. Syphilis seems to be not common among the non-Christian natives as we have not seen even a single case of chancre in them.

## PATHOLOGY

We are not in a position to report on this topic.

## DIAGNOSIS

The most important point about yaws in regard to its diagnosis is its relationship with syphilis. The fact that it occurs most oftenly among children is an argument against syphilis, and its occurrence among humble villagers whose general health is not much affected is another argument. But for a good differentiation between these two diseases let us use the tabulation by Spittel which is as follows:

### YAWS

- |  |   |
|--|---|
| <p>1. Not congenital. No reciprocal immunity.</p> <p>2. Primary sore extra-genital.</p> <p>3. Secondary stage:</p> <p style="padding-left: 20px;">(a) Typical yaw pathognomonic. Furfuraceous desquamation and plantar lesions also characteristics.</p> <p style="padding-left: 20px;">(b) Mucous membrane unaffected.</p> <p style="padding-left: 20px;">(c) Itching common.</p> <p style="padding-left: 20px;">(d) Alopecia unknown.</p> <p style="padding-left: 20px;">(e) Eyes unaffected.</p> <p>4. Tertiary state:</p> <p style="padding-left: 20px;">(a) Visceral lesions rare if they occur at all.</p> | <p style="padding-left: 20px;">(b) Nervous system scarcely over seriously affected.</p> <p style="padding-left: 20px;">(c) Blood vessels—Perivascular infiltration and endothelial proliferation of intima not generalized as in syphilis.</p> <p>5. Yaws is better resisted than syphilis: shown by—</p> <p style="padding-left: 20px;">(a) Slight constitutional disturbance;</p> <p style="padding-left: 20px;">(b) Greater exuberance of eruption, scars more keloidal;</p> <p style="padding-left: 20px;">(c) Slower development of lesions.</p> <p>6. Does not respond to well mercury.</p> |
|--|---|

## SYPHILIS

1. Congenital.
2. Primary sore usually genital.
3. Secondary stage:
  - (a) Syphilis seldom imitates these.
  - (b) Mucous membrane often affected.
  - (c) Itching rare.
  - (d) Alopecia may occur.
  - (e) Iritis common; choroiditis and retinitis rare.
4. Tertiary state:
  - (a) Visceral lesions occur, e.g. pericellular cirrhosis, gumata of liver, testis, kidney.
  - (b) Nervous system prone to infecting myelitis, cranial nerve palsies, gumma of brain and spinal cord, tabes, G.P.I.
  - (c) Endarteritis obliterans, thrombosis of cerebral arteries, arteriosclerosis, and aneurysm liable to occur.
5. Syphilis makes more serious wreck of the constitution affecting more vital structures; while yaws chiefly attacks connective tissues.
6. Responds well to mercury.

## RESULT OF TREATMENT

Our data are incomplete so that we can not give you our result in figures. This report is only preliminary and we have just begun in the later part of last month to get more detailed and accurate data. We wonder if you can imagine how hard it is when you are dealing with mostly ignorant Moros and with a limited personnel. At present we may just give you our opinion of our result. The Moros after receiving the injection and recovery will not come back and assuming this to be always true that they do not come again because they are cured and through our conversation with some prominent "datus" and headmen having close contact with the mass of the population about the result of this campaign we have arrived at this provisional conclusion:

Patients having the secondary lesions and old primary lesions except palmar and plantar form require but one injection.

Those having recent ulceration require one or two injections.

Those having bone, lesions gummas, and old ulcers require several injections (the result is rather disappointing). But "gangosa" or rhinopharyngitis seems to yield readily.

We have not treated recent primaries.

The drug is really potent curing this disease miraculously especially the secondary lesions. Just several hours after injection the lesions begin to ooze pale yellow serum which softens the scabs and pushes them away. The oozing continues for several hours and again new but much thinner scabs are formed which in ten days later begin to fall leaving pale spots.

Young children below two years old seem to have marked reaction consisting of fever, malaise and drowsiness. In one case a baby, we have to admit regretfully, became delirious then comatous, and died twenty hours after the administration of neo-salvarsan. The child was about eight months old, well developed and was having abundant secondary eruptions. The

dose given was about fifteen (15) centigrams intramuscularly which is not too large. This sad accident we have ascribed to either a case of arsenical poisoning which is said to be more common after intramuscular injection of arsphonamine than by intravenous way of a case of hemorrhagic encephalitis which is the most serious late untoward effect of this drug. The parents of the baby refused performing the autopsy.

#### SUMMARY AND RECOMMENDATIONS

Yaws is endemic in the Province of Cotabato with almost every child of the Mohammedans who compose the greater part of the population passing through an attack of it.

Although we cannot state positively that this attack of yaws retards the development of these children, on the other hand we are sure that the tertiary lesion and its sequelae cause great suffering and ultimately an economic loss.

The prospect of its eradication is bright as the natives including their hearlers ("hadjis" and "panditas") welcome and admire the treatment by neo-salvarsan.

But to do this we must visit them in their own villages for not all can come to a central injecting station which in our case is the general hospital in the capital of the province.

This plan cannot be accomplished with our present personnel and we therefore request this honorable convention to recommend to the proper authorities the following:

That yaws campaign in the Province of Cotabato may be in the whole Mindanao and Sulu be carried on more actively, systematically and efficiently than what is done at present for the benefit of the province, hygienically, economically and even politically for it is at present a most efficient means of attracting the Mohammedans and Pagans, as exemplified by the case of Datu Alamad cited above.

That the Province of Cotabato be given an assistant district health officer to help the district health officer of the province in such a way that this campaign could be carried as suggested in the preceding paragraph by visiting the patients in their own villages, using the present dispensaries as centers of injection.

That more fund be allotted in favor of the office of the district health officer of the Province of Cotabato for buying the neo-salvarsan necessary and for defraying incidental expenses in carrying on this yaws campaign, as stated above, more actively, systematically and efficiently.

## THE RÔLE OF THE NURSING PROFESSION IN THE PROGRESS OF THE PHILIPPINES <sup>1</sup>

MEMBERS OF THE CONVENTION, LADIES AND GENTLEMEN:

The Acting Secretary of Public Instruction, Dr. Alejandro Albert, regrets very much that he cannot be with you this evening on account of illness, but he would not allow your kind invitation to pass unheeded without saying a few words at this gathering in order to express to you his interest in your work. He has therefore, asked me to read this message for him.

The practice of nursing was not entirely foreign to the Philippines during the Spanish régime. The first hospital was military in character and was established in 1571 soon after Legaspi arrived in the present City of Manila. The first lay hospital, however, was founded by a Franciscan lay Brother, Fray Juan Clemente, in 1578, as a dispensary at the Porteria of his convent in Manila, and still continues to administer to the sick under its present name, the San Lazaro Hospital. The origin of its present name takes its root from the fact that in 1631 there arrived in the Bay of Manila, 130 Christian Japanese lepers as a challenge to the religious spirit of the missionaries. The authorities at the time were loathed to receive them and were for sinking the whole shipload into the bay, but charity and religious zeal triumphed and they were allowed to land amidst imposing ceremonies and were cared for in this institution which up to 1898 was in charge of the Franciscan Order.

The second lay hospital was that of San Juan de Dios, founded in 1596 by the Brotherhood of Mercy, and by 1640, Governor-General Corcuera, had placed this and similar institutions in charge of the Brotherhood of San Juan de Dios. Up to this time all the establishments for the care of the sick, whether military or civil, were in charge of male attendants and it was not until 1866 that the San Juan de Dios Hospital passed into the care of the Sisters of Charity. Here, then, we have the beginnings of public nursing carried by women, who, although lacking much in scientific training, they exercised charity, however, to an unlimited degree.

---

<sup>1</sup> Read by Dr. Jose P. Bantug at the Philippine Columbian Club, Taft Avenue, Manila, before the Institute of Public Health Nurses, April 11, 1928.

Whatever may have been their shortcomings in the way to scientific care of the sick, it is nevertheless true that the practice of nursing at that time was then in its beginnings, and as you will remember, Florence Nightingale had but begun her epoch-making reforms scarcely 10 years before. You are, therefore, treading in the same footsteps, but your responsibility is all the greater because of your more thorough knowledge in the art and science of nursing. Your contribution to the progress of the Philippines have been positive in more ways than one; you have been an important factor in the reduction of infant mortality, and by your teachings and practical demonstrations in the prevention of disease have materially reduced the general mortality rate. The conservation of human power is the greatest asset a nation can boast of. Living conditions are being constantly improved through your earnest endeavor. To procure a more balanced diet would be the means of so increasing body resistance, as to resist the inroads of disease. The success that you have thus far achieved but confirms your positive worth to the community. We need more of you to continue to spread among our people the practice of a new religion which after the spiritual one should be encouraged and fostered among us, the religion of health.

You have done this and more. But in your dealings with the people in the community where you live, I expect that you will continue the good work. You should join every movement for social welfare. It is well for you to engage their interest in many of the activities for which you should take the leading part. There is probably no higher aim among trained young men and young women of today, than the improvement of the present living conditions in the Philippines and in this upward movement every available means should be made use of. There is no field of human endeavor which has a higher purpose than that of being of service to your fellow-men. We should not only be ready to fight an epidemic, but we can do a great deal more by preventing the occurrence of such epidemic and thus increase the well-being of the people. The question of infant mortality and the problem of nutrition are the two most outstanding problems of our day, and if we can but work for the further reduction of the one, and the promotion of the factors by which a more balanced diet could be secured, for the other, we shall have aided the progress of the country to a large degree. I would emphasize, however, the necessity of education for mothers and prospective mothers in the proper care of the child, and how



by a careful adjustment of the family budget and encouraging food production, the question of a more balanced diet need not occasion any great concern.

In brief outline, I have related to you the great part you have played in the progress of our people, but still greater glory awaits you in the near future, when you will be called upon to evolve those factors which will make for the physical development of the race and the economic greatness of our common country.

# **A TENTATIVE PLAN FOR SCHOOL HEALTH PROGRAM AND ORGANIZATION IN THE PHILIPPINES**

By Drs. J. S. FERNANDO, C. LIMJOCO, E. MADRID, F. ESTELLA,  
E. A. FABIE and F. MEDALLE

*Class of 1929, School of Sanitation and Public Health, U. P.*

## **INTRODUCTION**

The school children of today are the citizens of tomorrow. They spend much of their time at school so that there is the best place, outside their homes, to educate them in the practice of personal hygiene and sanitation. Quoting from Sundwall<sup>(16)</sup> the following pertinent paragraph forms a good background for our program:

The most far-reaching results to be anticipated in our nation-wide health movement will come from effective health activities in our schools, in our graded schools, high schools and universities. Especially is this true for our public schools. The impressions of childhood in the habits formed in early life are tenacious. Ingrain in the boys and girls health habits; correct physical conditions which are actual or potential handicaps; give them, by means of appropriate, wisely planned and guided instructions throughout their school period, an understanding of the fundamental principles of health promotion and disease prevention; instil in them keen and impelling appreciation of the fact that the maintenance of sound, active, vigorous and harmoniously developed bodies is a normal obligation they owe to themselves, to their friends, to society and their country.

## **OUR PRESENT SYSTEM**

There is no question that the present system of school<sup>(18)</sup> medical organization in the Philippines is susceptible to further improvement.<sup>(3)</sup> Our school physician, our family physician and the health officer is combined in the person of the much abused president of a sanitary division, who by law has many other specific duties to perform. From time to time the Director of Health and the district health officer require him to do special work. In the case of school medical inspections, he inspects the school building and premises, examine pupils, note physical defects, detect communicable diseases,<sup>(5)</sup> takes the initiative to correct them, treat and give the necessary sanitary advice. It is only in few provinces that a president of a sanitary division has district nurse to help him. In case however of dental hygiene and treatment the Red Cross Dentist looks

after this work. Even here the divisional health officer takes the rôle of a diagnostician.

Let us further study our present system of school medical examination. In the Province of Bulacan<sup>(13)</sup> for example, for the year 1927, there were 26,896 examined by eleven presents of sanitary divisions or an average of 2,500 children for each doctor. Granting that each student is examined for seven minutes<sup>(16)</sup> and the examination is done in the afternoon for three hours, on the basis of five working days a week, it will take each president of sanitary division some 100 working days. In other words, examinations have to be performed from June and up to October to finish his annual<sup>(6)</sup> medical examination alone. The period spent in travel is not taken into consideration. It is presumed further that the corrective treatment is done in the dispensary. This is usually located in the municipal building and we can imagine how much medical attention is given to the children at distant barrio schools?

#### A PROPOSED PLAN

Such being the case, let us for the present formulate a plan which we may introduce in the Philippines, outside the City of Manila, based from a review of the literature from other countries. A standard plan as adopted in any particular community seems to be inapplicable to this country. Our present economical situation prohibits an elaborate program with additional personnel, which is admittedly lacking for this purpose. Needless to say our Insular Budget carries more than 30 per cent for salaries alone.

From the view point of efficiency, it is of paramount importance that a separate entity be made exclusively responsible for school medical examination. The head of this activity shall be directly responsible to the Director of Health or the Director of Education. A third possibility is that this work be delegated under the supervision of the Public Welfare Commissioner. This office handles child welfare work and here is a big field of the extension of its activities. A fourth possibility is presented in which a medical officer of the Philippine Health Service is made a part time school medical inspector, thereby acting as a liaison officer between the two bureaus as practiced in New South Wales.<sup>(17)</sup> The dental hygiene work should continue as at present under the control of the Red Cross.

### THE SCHOOL NURSE

Viewed from experience, it is the consensus of opinion that a school nurse<sup>(2)</sup> is a necessity in the school health program.<sup>(15)</sup> She can assist the doctor in the examination of pupils as well as teachers, and she is more particularly fitted for the follow-up work and correction of defects. In this connection it can not be denied that we have nurses of the Philippine Health Service, the Puericulture Center, the Red Cross and the Bureau of Education employs male nurses. Having a separate unit or organization for this work, it is possible through mutual understanding to coördinate the work of these nurses that the school children get the fullest benefits from them. The Red Cross has nurses detailed exclusively for this work and they will serve as a nucleus for the realization of this plan.

### THE SCHOOL TEACHER

It is almost axiomatic to state that any activity among school children and schoolhouses and premises in which teachers are not interested is bound to fail. Based upon this assumption, the teacher should have an active participation in this work. They are directly in contact with their pupils for longer period of time than the school physician or nurses and therefore their influence is incomparable. They should, in the first place, be also examined and strive to be a model of good health for their pupils to emulate. A survey of the teachers in Shanghai for example shows many of them to have trachoma, enlarged tonsils and thyroid.<sup>(10)</sup> In the State of Virginia<sup>(2)</sup> the school health cards are prepared by teachers and medical inspection,<sup>(2)</sup> not examination, are made by the teachers. Doubtful defects or findings are referred to the nurse and the later consults the school physicians for her doubts. Consequently with such a distribution of work, less number of school medical officers are needed as compared with other states.<sup>(4)</sup> In order to qualify them for their additional duties, special classes are given by the school medical officer to teachers during vacation.<sup>(3)</sup> This should be supplemented by means of the Health<sup>(12)</sup> Manual, recently prepared concurrently by the Bureau of Education and the Philippine Health Service. With this coöperative work it is not far distant when our school medical inspection will be improved a hundred fold.

### THE PUPILS

Like all other activities, effort should be exerted to make the pupils understand the object of medical school examination. This is of course hardly possible in the lower grades. But it should be understood that it is an important part of the curriculum in which they should be interested.(1)

Our aim in this work is not only to ascertain the absence of disease but to secure a positive condition of good health. This is secured only by means of a well-rounded health program and constant attention to petty details.(7)

Again, the State of Virginia, 10 minutes every morning is spent for health inspection of the pupils by the teachers. It may be compared with the morning sick report of the Army. Likewise those returning to classes from absences, may report to the teachers the cause of their absence. The teachers may also learn from other pupils the cause of absences of some other schoolmates.

Needless to say group games, calisthenics, drills, etc. are part of our school program. School societies should encourage to receive lectures on health topics from local health officer or those interested in health activities.

### THE PARENTS

Last but not the least, the parents should be included in this school program. The mere fact that children are given medical examination is often a sufficient interest to the parents that their coöperation is forth-coming.(1) But the part that the parents should largely share is the question of nutrition. After the examination, the state of nutrition of a given child should be known by the teacher. The school nurse in her work for correction of defects, should visit the homes of the pupils and then explain to the parents what can be done to improve the nutrition of the child. McCollum(9) strongly recommends the inclusion of a quart of milk a day and leafy vegetable in the diet. The milk should be taken at recess for example. Those living at a distance from school should take hot lunch in school. Lombard(8) reported that with this means the average scholarship of pupils is raised. In this connection it is worth serious consideration the recommendation of Woolley(19) of having Mothers' Club handle the preparation and running of lunch

room on, say, no profit basis. Here again the teachers themselves can do it or the class in domestic science serves milk and hot lunches at cost-price to the pupils.

Mention may be made here that in Ontario<sup>(11)</sup> the parents are invited to be present at the examination of pupils, whose clothing is removed. Here the defects are explained to the parents. This is important in securing correction. For defect should be classified according to their severity <sup>(14)</sup> rather than their location in the body.

#### SUMMARY

1. Our present school medical program is far from being satisfactory.

2. A separate unit or entity should handle this work and give it due importance, organizing and coördinating such health agencies which will insure the school children not only the absence of disease but a condition of good health.

3. School medical inspection is an activity in which success can only be attained by the combined interest of the parents, school physicians, teachers and pupils.

#### REFERENCES

1. BLACKETT, J. F. Aims and tendencies of school medicine. *Journal of state medicine*, 1927, v. 35, 651-55.
2. BRYDON, M. E. The Virginia plan for health education in the public schools. *American Journal of Public Health*, 1924, v. 14, 229-33.
3. HAN, C. H. A survey of the hygienic conditions of the mission primary schools in the Province of Shangtung. *China Medical Journal*, 1927, v. 41, 206-221.
4. GREIG, J. S. School medical inspection in Australia. *Medical Journal of Australia*, 1926, v. 2, 694-705.
5. HAYES, E. R. Value of medical inspection of schools. *Nebraska Medical Journal*, 1926, v. 11, 266-68.
6. KING, D. S. Relation of school physician to family doctor. *Boston Medical and Surgical Journal*, 1926, v. 195, 605-615.
7. LEMPRIERE, L. R. Health of public school boy. *Journal of State Medicine*, 1928, v. 36, 79-95.
8. LOMBARD, LOU. Place of nutrition in school progress. *American Journal of Public Health*, 1924, 394-97.
9. MCCOLLUM, E. V. The newer knowledge of nutrition. Mac Millan, 1925.
10. MILLER, I. M. Health of school child. *China Medical Journal*, 1925, v. 39, 1101-13.
11. PHAIR, J. T. School health supervision in Ontario. *Child Health Bulletin*, 1928, v. 4, No. 1, p. 1-4.
12. P. I. BUREAU OF EDUCATION AND HEALTH SERVICE. Health; A Manual for Teachers. 1928.

13. P. I. HEALTH SERVICE. Annual report of the district health officer of Bulacan, 1927, p. 18-19. Tables "Q" and "H."
14. ROBERTS, F. L. School examinations analyzed. *Southern Medical Journal*, 1926, v. 19, 611-14.
15. SEARS, F. W. Correction of physical defects in school children. *New York State Journal of Medicine*, 1927, v. 27, 1081-1082.
16. SUNDWALL, JOHN. Constructive Health Activities in public schools. *J. A. M. A.* Aug. 4, 1923, 378.
17. SUTTON, HARVEY. School medical service of New South Wales. *The Medical Journal of Australia*, 1926, v. 2, 694.
18. VILLAFRANCA, R. and T. CORPUS. A survey of the sanitation of school buildings in the Philippine Islands. *Journal of the P. I. Medical Association*, 1928, v. 8, 19-22.
19. WOOLEY, T. O. Hygiene and preventive medicine in public schools. *Texas State Journal of Medicine*, 1924, v. 19, 517-20.

NOTE: These references were collected through the courtesy of Mr. Hernandez, Assistant Librarian of the Bureau of Science.

## ERADICATION OF LEPROSY

For a long time leprosy has eluded a cure. And the patient suffering from this disease assumes in its later and more advanced stages such a loathsome aspect that he came to be shunned and made to live apart from the rest of the mortals. The attitude of the chosen people towards the disease since Biblical days has added so much more to the confusion and has helped to perpetuate until the present day that concept of horror whenever we try to visualize it.

Leprosy was considered so incurable that throughout the Middle Ages elaborate rituals were performed placing the sufferer beyond the pale of the living. Thus, the expression, leprosy is a living death, is no mere figure of speech. It was, therefore, received with enthusiasm by the scientists the world over, the publication of Dr. Eliodoro Mercado's investigations at San Lazaro Hospital and resulted in the present standard treatment which, given in time, will result in complete cure in the majority of cases. At the present writing, more than 1,000 persons who have suffered from various stages of leprosy have been re-integrated to their homes. And present indications are that the earlier the disease is treated the better are the prospects of cure. In this connection, it is necessary to emphasize the fact that the coöperation of the individual patient is necessary to effect a complete cure and prevent relapses. To report early for treatment and consult a physician in all doubtful cases is a prerequisite for the cure and eradication of leprosy. To the Philippine Anti-Leprosy Society's motto, *Leprosy can be cured*, may now be added, **LEPROSY CAN BE ERADICATED.**

JACOBO FAJARDO

*Director of Health*



## MISCELLANEOUS

---

### ALBAY

Conferences were held with the Provincial Red Cross and municipal officials in connection with hygiene and sanitation problems found in the concentration zones. Sixteen houses were constructed for the refugees in Salvacion besides that safe water supply was furnished every day to refugees in Taysan, Bascaran, Anislag, Villahermosa, Puro and Baligang.

### BATANES

Important events accomplished during the month were: The suppression of influenza and whooping cough enforcing house-to-house inspection, and treating all the cases encountered was one to be considered important work.

### BATANGAS

Important works accomplished were: Extensive sanitary campaign in towns and in the barrios; detection of important communicable diseases.

### BOHOL

The undersigned (Tirso Coronel, D. H. O.) gave public lecture in the hall of the school building in Jagna, explaining the topic "Functions of the Philippine Health Service and Coöperation to the same" and attended about 490 teachers attending the Normal Institute.

### CAGAYAN

The most important works performed during the month were: The campaign against cholera, dysentery, influenza and infant mortality.

### CEBU

On the 13th of this month seven persons have been attacked in a house in Sanciangeo Street with diarrheas and vomiting which has been considered according to the symptom as cholera suspects, but bacteriological examination gives the result that only the head of the family who has been very serious was positive for vibrio non agglutinable, and the rest were negative for vibrio. All the preventive measures for real cases of cholera has been instituted since the discovery of the cases, appear after.

### DAVAO

The month was mostly devoted to the intensive campaign against trachoma among school children in the municipality of Santa Cruz.

**ILOILO**

The most important findings were: Numerous houses without sanitary closets in most of the municipalities inspected; some schoolhouses were found with closets in poor condition of use; great number of hogs have been found roaming around in public and private places; in some offices of sanitary inspectors no duplicates of written sanitary orders were found in the files; the dispensaries were all found well supplied with medicines; offices of presidents of sanitary division have improved in cleanliness and neatness; finally, many houses of strong materials were found without toilets in the most important commercial zone of the city of Iloilo.

**MASBATE**

Important accomplishment during this month were: The Health lecture before the student body of the Masbate Provincial High School.

The general condition of the District is fairly good.

**RIZAL**

Important works accomplished were: The campaign against cholera in Navotas, Malabon, and Caloocan; dysentery and typhoid campaign in Pasay; dysentery campaign in Marikina and Angono, Binangonan; campaign against insanitary condition of markets; repair of closets and artesian wells.

**ROMBLON**

Important works accomplished: The inspection of the insanitary places in the towns of the municipality of Romblon especially the district of Suba and Lumiguid drive; physical examination and treatment of the suspected leper Lupe Fajilan; inspection of the public closets and public slaughterhouse; house-to-house inspection in the residences of the reported pupils of the high school supposed to be suffering of influenza.

**SORSOGON**

During the month of July a total of 6,334 persons were inoculated with pure cholera vaccine in various municipalities. Most of these injections were made in the municipalities of Sorsogon and Pilar including Putiao, barrio of Pilar, where a considerable number of refugees from the Province of Albay on account of the volcanic eruption, took refuge. At the same time a more or less vigorous campaign for loose animals and for the construction of sanitary toilets was persistently made in the province. A closer inspection of foodstuffs sold in the markets was made particularly with respect to meat, fish, and raw fruits.

## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of July, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1928<sup>1</sup> BY NATIONALITIES

Nationality	Population
Americans.....	3,184
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>324,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
<b>Total.....</b>	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,347
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,937
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,668</b>
<b>Grand total.....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS JULY, 1928**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	
1-10.....	757.91	27.6	35.0	10	23.2	3	30.6	30.8
11-20.....	53.98	27.4	33.7	18	23.3	14	30.4	30.4
21-31.....	54.31	26.6	31.7	21.25	23.0	29	30.2	30.2

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	<i>Per cent</i>	<i>Per cent</i>		<i>Per cent</i>	
1-10.....	80.8	85.2		75.6	10
11-20.....	83.8	87.9	16	78.4	12
21-31.....	86.1	89.3	22	83.7	30

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (Open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		<i>Kms.</i>	<i>Kms.</i>		<i>mm.</i>	<i>mm.</i>	
1-10.....	NE	1,289.5	145.0	1	32.6	4.8	10
11-20.....	SW quad	2,552.5	552.5	12	22.9	4.2	11
21-31.....	SW	3,004.5	552.5	27	23.6	3.2	30

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	<i>h. m.</i>	<i>h. m.</i>		<i>mm.</i>	
1-10.....	70 20	9 35	10	50.3	6
11-20.....	39 20	8 50	18	147.2	10
21-31.....	29 10	5 45	25	111.2	11

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

# NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	8	5	13	48.87
Filipinos.....	630	612	1,242	49.06
Spaniards.....	2	4	6	36.16
Other Europeans.....	1	3	4	41.85
Chinese.....	30	30	60	39.59
All others.....	2	11	13	70.07
Total and average.....	673	665	1,338	48.58

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
No. I, MEISIC:							
1. Tondo.....	179	206	385	13	10	23	408
2. San Nicolas.....	55	37	92	3	2	5	97
3. Binondo.....	19	20	39	2	4	6	45
Total.....	253	263	516	18	16	34	550
No. II, SAMPALOC:							
4. Santa Cruz.....	73	65	138	3	4	7	145
5. Quiapo.....	31	19	50	.....	2	2	52
6. San Miguel.....	17	10	27	.....	.....	.....	27
7. Sampaloc.....	111	103	214	5	9	14	228
Total.....	232	197	429	8	15	23	452
No. III, PACO:							
8. Port Area.....	1	1	2	.....	.....	.....	2
9. Intramuros.....	24	26	50	.....	1	1	51
10. Ermita.....	29	26	55	3	.....	3	58
11. Malate.....	66	56	122	4	5	9	181
12. Paco.....	17	24	41	2	3	5	46
13. Pandacan.....	3	14	17	1	.....	1	18
14. Santa Ana.....	12	16	28	.....	2	2	30
Total.....	152	163	315	10	11	21	336
Grand total.....	637	623	1,260	36	42	78	1,338

Attended by physicians, living, 413; stillbirths, 23.

Attended by midwives, living, 111; stillbirths, 3.

Attended by families, living, 814; stillbirths, 9.

**NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES**

(Stillbirths not included)

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	3	1	4	15.04
Filipinos.....	363	329	692	27.33
Spaniards.....	3	1	4	24.11
Other Europeans.....	2	2	2	20.93
Chinese.....	19	7	26	17.16
All others.....	2		2	10.78
<b>Total and average.....</b>	<b>390</b>	<b>340</b>	<b>730</b>	<b>26.50</b>

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS**

(Stillbirths not included)

Districts	Male	Female	Total
<b>No. I, Meisic:</b>			
1. Tondo.....	119	106	225
2. San Nicolas.....	33	22	55
3. Binondo.....	14	7	21
<b>Total.....</b>	<b>166</b>	<b>135</b>	<b>301</b>
<b>No. II, Sampaloc:</b>			
4. Santa Cruz.....	63	43	106
5. Quiapo.....	10	12	22
6. San Miguel.....	4	7	11
7. Sampaloc.....	65	62	127
<b>Total.....</b>	<b>142</b>	<b>124</b>	<b>266</b>
<b>No. III, Paco:</b>			
8. Port Area.....		1	1
9. Intramuros.....	18	16	34
10. Ermita.....	5	6	11
11. Malate.....	28	25	53
12. Paco.....	19	17	36
13. Pandacan.....	5	7	12
14. Santa Ana.....	7	9	16
<b>Total.....</b>	<b>82</b>	<b>81</b>	<b>163</b>
<b>Grand total.....</b>	<b>390</b>	<b>340</b>	<b>730</b>

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED**

(Stillbirths not included)

Social conditions	Male	Female
Married.....	118	98
Divorced.....		
Widowed.....	39	43
Single.....	302	247
Conditions not stated.....	3	3
<b>Total.....</b>	<b>462</b>	<b>391</b>
<b>Grand total.....</b>	<b>853</b>	

Stillbirths, 35.

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

(Stillbirths not included)

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	116	108	8	5	237
1 year plus.....	54	44	5	10	113
2 years plus.....	14	11	1	2	28
3 years plus.....	5	10	3	1	19
4 years plus.....	5	1			6
5 to 9 years.....	11	7	2	1	21
10 to 14 years.....	10	7	1	3	21
15 to 19 years.....	10	14	6	6	36
20 to 24 years.....	20	15	7	3	45
25 to 29 years.....	10	16	4	3	33
30 to 34 years.....	22	12	3	2	39
35 to 39 years.....	13	17	7	3	40
40 to 44 years.....	5	11	8	2	26
45 to 49 years.....	16	11	2	4	33
50 to 54 years.....	21	14	2		37
55 to 59 years.....	17	8	5	2	32
60 to 64 years.....	9	5	2	2	18
65 to 69 years.....	5	4	2	1	12
70 to 74 years.....	12	5	2	1	20
75 to 79 years.....	2	3			5
80 to 84 years.....	6	7			13
85 to 89 years.....	3	3			6
90 to 94 years.....	1	3			4
95 to 99 years.....	3	3	1		7
100 years and over.....		1			1
Age not stated.....					
Total.....	390	340	71	51	852

One male filipino, about 45 years of age, permanent residence unknown not included in the above table.

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

(Stillbirths not included)

Internationalist numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
	a. Typhoid fever.....			14	8							1		22
5	b. Paratyphoid fever.....													1
7	Malaria:													3
	a. Malarial fever.....			1	2									3
9	Measles.....			1										1
10	Whooping cough.....			1	1									2
11	Diphtheria.....			1										1
	Influenza:													
	a. With pulmonary complications specified.....			1	1									1
	b. Without pulmonary complications specified.....			2	4							1		7
16	Dysentery:													1
	a. Amebic.....			3	1									4
	b. Bacillary.....			4	3					1				8
	c. Unspecified or due to other causes.....			9	6									15
21	Erysipelas.....			1	1									2
23	Lethargic encephalitis.....			1	1									2
24	Meningococcus.....			1	1									1
27	Anthrax.....			1										1
29	Tetanus:													1
	a. Umbilical.....			1	1									2
	b. Others.....			3										3
30	Mycoses.....													1
31	Tuberculosis of the respiratory system.....				1									1
32	Tuberculosis of the meninges and central nervous system.....			73	71			1		6		1		153
33	Tuberculosis of the intestines and peritoneum.....			2	1					1				4
36	Tuberculosis of other organs:			2	2									4
	b. Tuberculosis of the bones (vertebral column excepted).....									1				1
	c. Tuberculosis of the lymphatic system (mesenteric and retroperitoneal glands excepted).....			1										1
37	Disseminated tuberculosis:													1
	b. Chronic or unspecified.....			2								1		2
38	Syphilis.....													1





# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

Internationalist numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
101	Pneumonia:													12
	a. Lobar.....	1		5	4	1			1					4
	b. Unspecified.....			2	2									2
102	Pleurisy.....			2										1
103	Congestion and hemorrhagic infarct of the lung.....				1									1
105	Asthma.....			3	1									4
108-127	<i>VI. Diseases of the digestive system</i>													
111	Ulcer of the stomach and duodenum:													1
	a. Ulcer of the stomach.....			3	1									4
112	Other diseases of the stomach (cancer excepted).			29	19									48
113	Diarrhea and enteritis (under 2 years of age).....			8	5									13
114	Diarrhea and enteritis (2 years and over).....			1						1				2
117	Appendicitis and typhlitis.....													2
118	Hernia, intestinal obstruction:			2										2
	a. Intestinal obstruction.....													3
122	Cirrhosis of the liver:			2	1									3
	b. Not specified as alcoholic.....			2	1									1
126	Peritonitis without specified cause.....													
128-142	<i>VII. Nonvenereal diseases of the genitourinary system and annexa</i>													
128	Acute nephritis (including unspecified under 10 years of age).....			4	6									10
129	Chronic nephritis (including unspecified 10 years and over).....			6	5									11
141	Other diseases of the female genital organs.....				1									1
143-150	<i>VIII. The puerperal state</i>													
143	Accidents of pregnancy:													1
	c. Others under this title.....				1									1
144	Puerperal hemorrhage.....				2									2
146	Puerperal septicemia.....				1									1

159 Congenital malformations (stillbirths not included):

b. Congenital malformations of the heart..... 1

*XII. Early infancy*

160 Congenital debility, icterus, and sclerema..... 24

161 Premature birth; injury at birth:..... 8

a. Premature birth (not stillborn)..... 13

b. Injury at birth (not stillborn)..... 1

162 Other diseases peculiar to early infancy..... 3

*XIII. Old age*

164 Senility..... 12

*XIV. External causes*

182 Accidental drowning..... 2

187 Accidental traumatism by machines..... 1

188 Accidental traumatism by other crushing (vehicles, railways, landallides, etc.):..... 1

c. Automobile accidents..... 1

198 Homicide by cutting or piercing instruments..... 1

202 Other external violence..... 1

*XV. Ill-defined diseases*

204-205 Cause of death not specified or ill-defined:..... 1

b. Not specified or unknown.....

Total.....

Grand total.....

3	1	363	329	3	1	2	19	7	2		730
4		692		4		2	26		2		730



87-96	<i>IV. Diseases of the circulatory system</i>				
90	Other diseases of the heart.....	2	1		3
97-107	<i>V. Diseases of the respiratory system</i>				
99	Bronchitis:				
	a. Acute.....		1		1
	b. Chronic.....		1		1
100	Bronchopneumonia:				
	a. Bronchopneumonia.....	10	4	1	15
101	Pneumonia:				
	a. Lobar.....	9	1		10
108-127	<i>VI. Diseases of the digestive system</i>				
111	Ulcer of the stomach and duodenum:				
	a. Ulcer of the stomach.....	1			1
113	Diarrhea and enteritis (under 2 years of age).....		3		3
114	Diarrhea and enteritis (2 years and over).....	2	1		3
118	Hernia, intestinal obstruction:				
	a. Hernia.....	1			1
	b. Intestinal obstruction.....	2			2
122	Cirrhosis of the liver:				
	b. Not specified as alcoholic.....	1			1
124	Other diseases of the liver.....	1			1
126	Peritonitis without specified cause.....	1			2
128-142	<i>VII. Nonreneral diseases of the genito-urinary system and annexa</i>				
128	Acute nephritis (including unspecified under 10 years of age).....	1			1
129	Chronic nephritis (including unspecified 10 years and over).....	2	3	1	7
131	Other diseases of the kidneys and annexa.....	1			1
135	Diseases of the prostate.....	1			1
139	Benign tumors of the uterus.....		2		2
143-150	<i>VIII. The puerperal state</i>				
143	Accidents of pregnancy:				
	c. Others under this title.....		1		1
144	Puerperal hemorrhage.....		1		1
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>				
151	Gangrene.....	1	1		2
153	Acute abscess.....	1	1		2
160-163	<i>XII. Early infancy</i>				
160	Congenital debility, icterus, and sclerema.....	1	1		2
162	Other diseases peculiar to early infancy.....	1			1

NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued  
(Stillbirths not included)

Internationalist numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
164-														
164	XIII. Old age			1										1
165-203	Senility													
	XIV. External causes													
168	Suicide by hanging or strangulation													1
178	Accidental burns (conflagration excepted)				1					1				1
182	Accidental drowning									1				1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	a. Railroad accidents			1										1
	c. Automobile accidents			1										1
	Total			65	48	1				5	3			122
	Grand total				113		1				8			122

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS  
IN THE CITY OF MANILA, DURING THE MONTH OF JULY, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month		
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days				
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All causes .....	124	113	15	17	12	10	3	6	7	6	3	4	40	43
COMMUNICABLE DISEASES:														
Typhoid and paratyphoid fever (1) .....														
Smallpox (6) .....														
Measles (7) .....														
Whooping-cough (9) .....		1												
Diphtheria (10) .....		1												
Influenza (11) .....														
Asiatic cholera (14) .....														
Dysentery (16) .....														
Meningococcus meningitis (24) .....														
Other epidemic and endemic diseases (25) .....														
Tetanus (29) .....	1	1			1			1					1	1
Other infectious diseases (1-42) <sup>1</sup> .....	1	3												
Barberi (55) .....	21	27	1	2	2	2	2	2	2	4	1	1	6	11
Diseases of the nervous system (70; 71; 80; 85) .....	1	5												
Respiratory diseases (99; 100; 101; 107) .....	40	33								1	1	1	1	1
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127) .....	17	11								1	1		1	1
Congenital malformation (169) .....	1													
Early infancy (160; 161; 162; 163) .....	37	30	14	15	9	8	3	3	4			1	2	31
All other causes (43-205) <sup>1</sup> .....	5	1												28

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF JULY, 1928 (INCLUDING TRANSIENTS)—Continued**

[Stillbirths not included]

Causes of death	Age at death under 1 year														Total under 1 year									
	1 month +		2 months +		3 months +		4 months +		5 months +		6 months +		7 months +				8 months +		9 months +		10 months +		11 months +	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
All causes .....	9	7	12	6	3	6	7	7	4	8	9	5	9	7	5	8	9	7	8	3	9	6	84	70
COMMUNICABLE DISEASES:																								
Typhoid and paratyphoid fever (1) .....																								
Smallpox (6) .....																								
Measles (7) .....																								
Whooping-cough (9) .....																								
Diphtheria (10) .....																								
Influenza (11) .....																								
Asiatic cholera (14) .....																								
Dysentery (16) .....																								
Meningococcus meningitis (24) .....																								
Other epidemic and endemic diseases (25) .....																								
Tetanus (29) .....																								
Other infectious diseases (1-42) <sup>1</sup> .....																								
Beriberi (55) .....																								
Diseases of the nervous system (70; 71; 80; 85) .....																								
Respiratory diseases (99; 100; 101; 107) .....																								
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127) .....																								
Congenital malformation (159) .....																								
Early infancy (160; 161; 162; 163) .....																								
All other causes (43-206) <sup>1</sup> .....																								

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.



## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set.....	22,196
Number of rats caught by spring traps.....	2,664
Number of cage wire traps set.....	527
Number of rats caught by cage wire traps.....	2
Number and kind of baits (coconuts).....	23,250
Number of poison portions placed.....	23,711
Number of rats found poisoned.....	416
Number of rats killed by clubs and other weapons.....	1,356
Number of rats found dead from other causes.....	481
Total number of rats otherwise caught, found dead or killed.....	4,919
Total number of rats sent to the laboratory for examination.....	4,919
Total number of rats found positive for plague.....	0

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF JULY, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. { No. 1.....	12	4	3	1	.....	.....	.....	.....	12	4	4	2	16	6
No. 2.....	4	2	1	.....	.....	.....	.....	.....	4	2	3	2	7	4
No. 3.....	4	1	2	.....	.....	.....	.....	.....	4	1	3	.....	6	1
No. 4.....	7	1	.....	.....	2	1	.....	.....	9	2	.....	.....	9	2
II. { No. 5.....	3	.....	1	.....	.....	.....	.....	.....	3	.....	1	.....	4	.....
No. 6.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
No. 7.....	7	2	2	.....	.....	.....	.....	.....	7	2	3	1	10	3
No. 8.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 9.....	3	.....	3	1	.....	.....	.....	.....	3	.....	3	.....	6	1
No. 10.....	2	1	1	.....	.....	.....	.....	.....	2	1	1	.....	3	1
III. { No. 11.....	5	1	2	.....	.....	.....	.....	.....	5	1	2	.....	7	1
No. 12.....	2	1	1	1	.....	.....	.....	.....	2	1	1	.....	3	2
No. 13.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	2	.....
No. 14.....	1	1	1	.....	.....	.....	.....	.....	1	1	1	.....	2	1
Grand total.....	50	14	20	3	2	1	5	5	52	15	25	8	77	23

**REMARKS:**

Cases confirmed as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Typhoid carrier—None.

76

1

3

3

36

0

2

33

27

12

DYSENTERIES REPORTED DURING THE MONTH OF JULY, 1928, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. ....	3 2	1 1	1 1	1			1 1	1	3 2	1 1	2 2	2	5 4	1 3
II. ....	6 2	4 1	2	2	2 1	1	1	1	8 3	6 2	3	3	11 3	9 2
III. ....	2	1	2		1	1		2	2	1	4	2	6	
Grand total. ....	17	9	9	4	9	8	9	6	26	17	18	10	44	27

## REMARKS:

Amoebic dysentery.....

Bacillary dysentery.....

Unspecified.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Dysentery carrier—4

4

24

16

8

7

**CHOLERA REPORTED DURING THE MONTH OF JULY, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths
I. ....	No. 1.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 2.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 3.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 4.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
II. ....	1	.....		1	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 5.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 6.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 7.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 8.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 9.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 10.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
III. ....	No. 11.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 12.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 13.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 14.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
Grand total. ....	1	.....		1	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
							1	.....		.....	.....		.....	.....		.....	.....		.....	.....
													1	.....		.....	.....		.....	.....
																1	.....		.....	.....
																			2	.....

**REMARKS:**

2 nonresident cases were reported during the month.

Cholera carrier—15

DIPHTHERIA REPORTED DURING THE MONTH OF JULY, 1928, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths
I. { No. 1.....																				
{ No. 2.....	1	1											1	1					1	1
{ No. 3.....																				
II. { No. 4.....																				
{ No. 5.....																				
{ No. 6.....																				
{ No. 7.....	1			1									1			1			2	
III. { No. 8.....																				
{ No. 9.....																				
{ No. 10.....																				
{ No. 11.....																				
{ No. 12.....																				
{ No. 13.....																				
{ No. 14.....																				
Grand total.....	2	1		1									2	1		1			3	1

## REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—1

2

0

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF JULY, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	30	16	1	2
Varicella.....		1		
Varioloid.....				
Smallpox.....				
Measles.....	3	1	1	
Whooping cough.....	2	2	1	1
Influenza.....	9	9	3	5
Bubonic plague.....				
Encephalitis lethargica.....	1	1	1	1
Meningitis cerebrospinal epidemic.....		1		1
Tuberculosis of the respiratory system.....	178	154	81	72
Tuberculosis of other organs.....	11	5	9	3
Beriberi, infantile.....	21	26	21	26
Beriberi, adults.....		2		2

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	28	13		2
Varicella.....				
Varioloid.....				
Smallpox.....				
Measles.....				
Whooping cough.....				
Influenza.....	4	1	1	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	27	15	7	4
Tuberculosis of other organs.....	2		1	
Beriberi, infantile.....		1		1
Beriberi, adults.....	2		2	

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF JULY, 1928**

Sera and vaccines	On hand July 1, 1928	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of the month
Antidiphtheric serum (tubes).....	23	200	223		223
Antidysenteric serum (ampoules).....	98	1,500	1,598	1,585	13
Antitetanic serum (units).....	800,000		800,000	300,000	500,000
Cholera vaccine (c.c.).....	600	238,000	238,600	228,300	10,300
Dried vaccine virus (units).....	7,050	100,000	107,050	98,650	8,400
Dysenteric vaccine (c.c.).....	45,820	180,000	225,820	199,150	26,670
Fresh vaccine virus (units).....	47,900	150,000	197,900	192,100	5,800
Gonococcus Vaccine (ampoules).....		90	90	90	
Mixed typhoid-cholera vaccine (c.c.).....	47,820	178,000	225,820	178,380	47,440
Normal horse serum (ampoules).....					
Typhoid vaccine (c.c.).....	15,000	21,000	36,000	19,200	16,800

# REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF JULY, 1928

32  
33  
33

Health district	Municipal districts	Vaccinations			Inspection of persons vaccinated								
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over		Total		
			Never	Successfully	Unsuccessfully	Positive	Negative	Positive	Negative	Positive		Negative	
No. 1.	Tondo.....	551	475	.....	76	531	61	20	5	.....	.....	551	66
	San Nicolas.....	918	64	844	10	88	8	1	.....	.....	.....	89	22
	Binondo.....	90	69	.....	21	75	22	.....	.....	.....	.....	75	101
	Santa Cruz.....	889	155	686	48	208	43	2	2	317	56	527	12
	Quiapo.....	61	46	.....	15	66	9	1	1	.....	.....	67	31
No. 2.	San Miguel.....	21	11	.....	10	28	5	3	.....	.....	.....	31	5
	San Jacinto.....	378	291	.....	87	342	62	22	.....	2	1	366	63
	Sampaloc.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Port Area.....	102	74	.....	27	27	7	1	1	.....	.....	28	8
	Intramuros.....	45	34	.....	11	18	5	1	.....	.....	.....	19	5
No. 3.	Ermita.....	155	92	.....	34	129	32	1	.....	.....	.....	130	32
	Malate.....	196	115	29	79	105	19	25	5	10	4	140	28
	Paco.....	20	6	.....	14	26	12	2	.....	.....	.....	28	12
	Pandacan.....	20	14	.....	6	8	4	.....	.....	.....	.....	8	4
	Santa Ana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....		3,448	1,448	1,562	438	1,651	289	79	14	329	63	2,059	366

## Vaccine virus:

Remainder from last month.....  
 Received during the month.....  
 Used during the month.....  
 Remainder for the next month.....

4,850 units  
 8,000 do  
 5,025 units  
 7,825 do

Balance..... 12,850 units 12,850 units

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA  
DURING THE MONTH OF JULY, 1928<sup>1</sup>**

Health districts	Municipal districts	First injections		Second injections		Total	
		V.	R.	V.	R.	V.	R.
No. 1.....	{ Tondo.....	3,876		2,272		6,148	
	{ San Nicolas.....	1,912		1,574		3,486	
	{ Binondo.....	2,226	1,311	891	318	3,117	1,629
No. 2.....	{ Santa Cruz.....	620		416		1,036	
	{ Quiapo.....	13		4		17	
	{ San Miguel.....						
	{ Sampaloc.....	44		30		74	
No. 3.....	{ Port Area.....						
	{ Intramuros.....	1,207	896	1,024	622	2,231	1,518
	{ Ermita.....	39		235		274	
	{ Malate.....	13		3		16	
	{ Paco.....	3				3	
	{ Pandacan.....	3				3	
	{ Santa Ana.....	3		3		6	
Total.....		9,959	2,207	6,452	940	16,411	3,147

<sup>1</sup> V., in persons never vaccinated before; R., revaccinations.

**ANTITYPHOID AND ANTICHOLERA VACCINATIONS PERFORMED IN THE  
CITY OF MANILA DURING THE MONTH OF JULY, 1928<sup>1</sup>**

Health districts	Municipal districts	First injections		Second injections		Third injections		Total	
		V.	R.	V.	R.	V.	R.	V.	R.
No. 1.....	{ Tondo.....	82	1,859	10	1,445		1,136	92	4,440
	{ San Nicolas.....	13	1,883	10	1,003	4	830	27	3,716
	{ Binondo.....	35	2,963	26	2,601	6	2,349	67	7,913
No. 2.....	{ Santa Cruz.....	29	2,005	13	1,734	9	1,016	51	4,755
	{ Quiapo.....		688		432		301		1,421
	{ San Miguel.....	15	783		533		505	15	1,821
	{ Sampaloc.....	15	3,712	11	3,341		3,302	26	10,355
No. 3.....	{ Port Area.....								
	{ Intramuros.....	21	836	8	363	1	228	30	1,427
	{ Ermita.....	2	2,393	3	1,775	3	804	8	4,972
	{ Malate.....		783		507		596		1,886
	{ Paco.....		1,475		891		596		2,962
	{ Pandacan.....	37	745	35	392	27	318	99	1,455
	{ Santa Ana.....		337		318		248		903
Total.....		249	20,462	116	15,335	50	12,229	415	48,026

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections. Typhoid and paratyphoid vaccine are used for the third injections.

V., in persons never vaccinated before; R., revaccinations.



**CONSOLIDATED ANTI-SMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Total vaccina- tions	Vaccinations		
		Never	Success- fully	Unsuccess- fully
Abra.....	7,644	1,272	2,135	4,237
Agusan.....	3,010	919	833	1,258
Albay.....	32,386	7,270	9,940	15,176
Antique.....	13,177	3,978	5,801	3,398
Bataan.....	6,612	2,747	943	2,922
Batanes.....	932	115	441	376
Batangas.....	41,157	11,733	11,250	18,174
Bohol.....	37,186	11,509	10,735	14,942
Bukidnon.....	4,649	1,857	643	2,149
Bulacan.....	24,085	8,047	8,437	7,601
Cagayan.....	59,001	11,119	40,672	7,210
Camarines Norte.....	4,812	1,578	1,196	2,038
Camarines Sur.....	9,211	2,337	2,030	4,844
Capiz.....	24,619	6,977	8,911	8,731
Catanduanes.....	25,322	2,750	10,098	12,474
Cavite.....	91,440	5,988	8,944	76,508
Cebu.....	69,673	20,182	10,943	38,548
Cotabato.....	14,831	4,468	4,501	5,862
Davao.....	20,684	7,821	7,071	5,792
Ilocos Norte.....	82,941	5,183	62,439	15,319
Ilocos Sur.....	15,753	4,337	2,737	8,679
Iloilo.....	83,179	26,477	42,230	14,472
Isabela.....	12,104	3,048	2,076	6,980
Laguna.....	75,726	8,083	57,772	9,871
Lanao.....	10,986	4,271	4,181	2,534
La Union.....	19,382	4,125	399	14,858
Leyte.....	77,425	22,487	32,885	22,053
Marinduque.....	7,455	1,583	3,760	2,112
Masbate.....	45,991	5,749	32,645	7,597
Mindoro.....	5,809	1,381	1,212	3,216
Misamis.....	18,539	6,289	1,515	10,735
Mountain Province.....	25,243	7,369	8,126	9,748
Nueva Ecija.....	21,560	7,975	2,708	10,877
Nueva Vizcaya.....	3,702	981	531	2,190
Occidental Negros.....	66,191	21,866	28,046	16,279
Oriental Negros.....	26,599	9,442	6,032	11,125
Palawan.....	1,321	345	396	580
Pampanga.....	18,361	7,178	1,337	9,846
Pangasinan.....	52,523	16,018	10,564	25,941
Rizal.....	19,607	5,687	8,970	4,950
Romblon.....	6,598	1,732	1,889	2,977
Samar.....	36,502	8,230	9,672	18,600
Sorsogon.....	25,506	5,249	7,209	13,048
Sulu.....	14,489	5,444	4,971	4,074
Surigao.....	5,944	1,855	988	3,101
Tarlac.....	16,635	4,265	9,041	3,329
Tayabas.....	23,090	9,256	3,638	10,196
Zambales.....	5,597	1,793	625	3,179
Zamboanga.....	10,274	4,355	1,228	4,691
<b>Total.....</b>	<b>1,325,463</b>	<b>324,720</b>	<b>495,346</b>	<b>505,397</b>

**NOTE:**<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED ANTI SMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928 <sup>1</sup>—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	683	309	1,369	975	1,165	2,132	3,217	3,416
Agusan.....	133	120	246	408	485	296	864	824
Albay.....	3,794	1,525	3,793	1,324	4,808	4,040	12,395	6,889
Antique.....	1,271	411	1,590	784	1,447	1,696	4,308	2,891
Bataan.....	1,711	288	1,856	662	728	340	4,295	1,290
Batanes.....	74	37	153	99	270	222	497	358
Batangas.....	5,772	1,453	8,104	3,555	7,432	7,136	21,308	12,144
Bohol.....	3,622	1,610	5,693	3,177	8,686	7,957	18,001	12,744
Bukidnon.....	143	101	353	397	938	1,136	1,434	1,634
Bulacan.....	4,962	1,370	4,580	2,248	3,867	3,443	13,409	7,061
Cagayan.....	3,019	788	5,211	2,015	13,947	17,318	22,177	20,121
Camarines Norte.....	891	257	1,506	450	793	382	3,190	1,089
Camarines Sur.....	1,244	517	1,762	655	2,592	1,361	5,598	2,533
Capiz.....	2,304	548	3,130	1,401	7,175	3,517	12,609	5,466
Catanduanes.....	1,863	936	2,730	1,233	5,189	4,597	9,782	6,766
Cavite.....	3,901	2,092	5,776	4,732	23,042	29,917	32,719	36,741
Cebu.....	6,972	3,154	8,218	4,134	7,983	10,218	23,173	17,506
Cotabato.....	587	266	1,166	713	3,317	2,081	5,070	3,060
Davao.....	802	331	1,858	1,030	5,289	4,322	7,949	5,683
Ilocos Norte.....	3,400	1,441	9,361	4,573	28,531	29,727	41,292	35,741
Ilocos Sur.....	1,868	962	2,900	1,549	2,783	2,437	7,551	4,948
Iloilo.....	5,567	1,805	10,495	4,491	16,193	23,355	32,255	29,651
Isabela.....	1,539	513	2,018	706	2,671	1,509	6,228	2,728
Laguna.....	2,456	2,227	4,010	3,824	12,689	24,211	19,155	30,262
Lanao.....	592	300	804	716	1,568	2,218	2,964	3,234
La Union.....	2,444	1,111	3,447	3,072	2,407	3,901	8,298	8,084
Leyte.....	2,609	647	10,501	2,443	20,134	15,390	33,244	18,480
Marinduque.....	751	260	396	183	1,027	2,285	2,174	2,728
Masbate.....	1,369	250	4,276	1,041	15,356	7,694	21,003	8,985
Mindoro.....	495	171	712	396	1,124	1,099	2,331	1,666
Misamis.....	1,138	497	1,697	839	2,738	1,795	5,573	3,131
Mountain Province.....	384	154	1,391	842	4,787	3,596	6,562	4,592
Nueva Ecija.....	2,732	1,345	4,827	2,422	3,147	3,381	10,706	7,148
Nueva Vizcaya.....	527	272	331	375	687	1,229	1,545	1,876
Occidental Negros.....	4,673	1,081	8,653	2,710	12,722	11,965	26,048	15,756
Oriental Negros.....	4,115	1,228	5,024	2,125	5,089	3,420	14,228	6,773
Palawan.....	4	1	38	21	353	149	395	171
Pampanga.....	2,079	1,204	1,662	943	618	802	4,359	2,949
Pangasinan.....	8,127	2,479	9,670	3,419	9,658	9,433	27,455	15,331
Rizal.....	2,832	1,457	1,131	1,276	2,351	4,162	6,314	6,895
Romblon.....	926	325	1,288	398	1,655	911	3,869	1,634
Samar.....	1,701	804	3,320	2,165	6,538	5,153	11,559	8,122
Sorsogon.....	1,257	621	2,662	1,153	7,639	4,545	11,558	6,319
Sulu.....	516	294	1,780	1,067	1,861	3,013	4,157	4,364
Surigao.....	509	176	750	365	1,619	1,267	2,878	1,811
Tarlac.....	1,260	813	2,509	1,972	2,164	3,708	5,933	6,493
Tayabas.....	3,816	2,060	5,118	2,376	4,418	3,202	13,352	7,638
Zambales.....	543	463	661	975	730	1,181	1,934	2,619
Zamboanga.....	597	447	1,421	1,119	1,659	1,901	3,677	3,467
<b>Total.....</b>	<b>104,574</b>	<b>41,521</b>	<b>161,947</b>	<b>79,541</b>	<b>274,071</b>	<b>280,750</b>	<b>540,592</b>	<b>401,812</b>

**NOTE:**<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Total
Abra.....	719	454	1,173
Agusan.....	1,880	373	2,253
Albay.....	380	226	606
Bukidnon.....	511	200	711
Bulacan.....	206	106	312
Cagayan.....	1,236	335	1,571
Camarines Sur.....	5,665	1,967	7,532
Capiz.....	5,196	2,846	8,042
Cebu.....	689	131	820
Iloilo.....	16,778	8,035	24,813
Laguna.....	3,895	2,022	5,917
La Union.....	10,023	5,471	15,494
Masbate.....	635	212	847
Mindoro.....	367	106	473
Misamis.....	630	102	732
Mountain Province.....	1,607	369	1,976
Nueva Vizcaya.....	19	15	34
Oriental Negros.....	56	.....	56
Palawan.....	91	81	172
Pampanga.....	1,176	209	1,385
Pangasinan.....	5,963	3,940	9,903
Rizal.....	1,408	444	1,852
Romblon.....	2,396	3,071	5,467
Tarlac.....	2,204	526	2,730
Tayabas.....	2,570	1,274	3,844
<b>Total.....</b>	<b>66,200</b>	<b>32,515</b>	<b>98,715</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Agusan.....	354	118	.....	472
Albay.....	10,117	2,885	282	13,284
Antique.....	2,057	1,217	.....	3,274
Bataan.....	78	.....	.....	78
Batangas.....	1,505	542	.....	2,047
Bulacan.....	11,932	690	.....	12,622
Camarines Sur.....	11,275	496	.....	11,771
Capiz.....	298	226	.....	524
Catanduanes.....	253	33	.....	286
Iloilo.....	222	85	.....	307
Laguna.....	516	239	5	760
Leyte.....	690	146	.....	836
Mindoro.....	375	.....	.....	375
Nueva Ecija.....	285	99	.....	384
Pampanga.....	761	.....	.....	761
Pangasinan.....	4,206	3,203	.....	7,409
Rizal.....	95,725	12,796	.....	108,521
Romblon.....	1,089	209	.....	1,298
Samar.....	688	197	.....	885
Sorsogon.....	3,346	490	.....	3,836
Tarlac.....	1,998	736	.....	2,734
<b>Total.....</b>	<b>147,765</b>	<b>24,407</b>	<b>237</b>	<b>172,409</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Albay.....	345	233	107	685
Batangas.....	57	41	.....	98
Bukidnon.....	157	72	20	249
Bulacan.....	1,267	1,048	385	2,700
Camarines Sur.....	842	146	.....	988
Iloilo.....	.....	120	.....	120
Laguna.....	4,223	3,029	1,286	8,538
Mindoro.....	340	30	.....	370
Pampanga.....	6	6	.....	12
Pangasinan.....	1,653	1,082	53	2,788
Rizal.....	2,207	840	185	3,232
Romblon.....	243	243	.....	486
Sorsogon.....	108	2	.....	110
Tarlac.....	1,466	413	3	1,882
Total.....	12,914	7,305	2,039	22,258

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOL-  
ERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Abra.....	2,403	1,851	.....	4,254
Agusan.....	2,695	1,381	.....	4,076
Antique.....	2,297	1,164	.....	3,461
Bataan.....	13,516	9,586	.....	23,102
Batanes.....	599	560	.....	1,159
Batangas.....	2,382	1,708	.....	4,090
Bohol.....	1,365	1,038	.....	2,403
Bukidnon.....	518	558	48	1,124
Bulacan.....	45	27	.....	72
Cagayan.....	2,647	1,427	.....	4,074
Camarines Norte.....	4,539	4,002	.....	8,541
Camarines Sur.....	1,072	494	.....	1,566
Capiz.....	102	148	.....	250
Cavite.....	49,960	47,550	.....	97,510
Cebu.....	12,166	2,621	93	14,880
Cotabato.....	192	.....	.....	192
Davao.....	1,505	727	.....	2,232
Ilocos Sur.....	1,811	1,083	46	2,940
Iloilo.....	21,273	4,755	.....	26,028
Isabela.....	46	37	.....	83
Laguna.....	765	543	.....	1,308
Lanao.....	6,293	2,792	.....	9,085
La Union.....	8,931	6,028	.....	14,959
Leyte.....	1,548	870	.....	2,418
Marinduque.....	4,310	2,349	.....	6,659
Masbate.....	499	88	.....	587
Mindoro.....	947	487	.....	1,434
Misamis.....	4,117	895	.....	5,012
Mountain Province.....	1,684	117	.....	1,801
Nueva Ecija.....	2,004	1,713	.....	3,717
Nueva Vizcaya.....	857	836	.....	1,733
Occidental Negros.....	9,607	4,554	.....	14,161
Oriental Negros.....	3,974	2,229	3	6,206
Palawan.....	59	59	.....	118
Pampanga.....	106,330	5,733	.....	112,063
Pangasinan.....	9,413	6,136	.....	15,549
Rizal.....	2,770	1,559	.....	4,329
Samar.....	1,853	739	.....	2,592
Sulu.....	30	.....	.....	30
Tarlac.....	2,521	1,470	.....	3,991
Tayabas.....	11,974	5,530	.....	17,504
Zambales.....	3,964	3,281	.....	7,245
Zamboanga.....	6,908	1,901	.....	8,809
Total.....	312,531	130,626	190	443,347

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF JULY, 1928**

**(No case and no death reported during the month)**

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF JULY, 1928<sup>1</sup>**

Provinces and towns	Cases	Deaths
Bulacan:		
Malolos.....	1	0
Cagayan:		
Ballesteros.....	1	1
Sanchez-Mira.....	2	1
Ilocos Norte:		
(x) Laoag.....	1	1
Pangasinan:		
Bayambang.....	1	1
Rizal:		
Navotas.....	1	0
Pasay.....	1	0
Total.....	8	4

**NOTE—(x)** This case and death of cholera is transient from Laoag, Ilocos Norte.

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF JULY, 1928**

Sanitary orders	Health districts			Total
	No. 1 Meisic	No. 2 Sampaloc	No. 3 Paco	
<b>Orders pending, July 1, 1928:</b>				
Minor.....	125	103	250	478
Sewer.....	24	52	4	80
Vacating.....	8	9		17
Filling.....	24	43	21	88
<b>Total.....</b>	<b>181</b>	<b>207</b>	<b>275</b>	<b>663</b>
<b>Orders issued during the month:</b>				
Minor.....	13	6	15	34
Sewer.....	1			1
Vacating.....				
Filling.....	2		2	4
<b>Total.....</b>	<b>16</b>	<b>6</b>	<b>17</b>	<b>39</b>
<b>Orders completed during the month:</b>				
Minor.....	8	6	7	21
Sewer.....			1	1
Vacating.....				
Filling.....				
<b>Total.....</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>22</b>
<b>Orders cancelled during the month:</b>				
Minor.....				
Sewer.....				
Vacating.....				
Filling.....				
<b>Total.....</b>				
<b>Orders pending July 31, 1928:</b>				
Minor.....	130	103	258	491
Sewer.....	25	52	3	80
Vacating.....	8	9		17
Filling.....	26	43	23	92
<b>Total.....</b>	<b>189</b>	<b>207</b>	<b>284</b>	<b>680</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	37	35	35	107
<b>Permits for minor building constructions:</b>				
Approved.....	39	52	35	126
Disapproved.....	8	8	6	22
<b>New buildings completed.....</b>	<b>11</b>	<b>32</b>	<b>33</b>	<b>76</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	35	46	25	106
Disapproved.....	15	15	6	36
<b>Prosecutions:</b>				
Convictions.....				
Dismissals.....	2			2
Amount of fines.....				
<b>Plumbing permits issued.....</b>	<b>51</b>	<b>65</b>	<b>43</b>	<b>159</b>
<b>Plumbing projects completed.....</b>	<b>31</b>	<b>69</b>	<b>40</b>	<b>140</b>
<b>Premises connected to the sanitary sewer to June 30, 1928.....</b>	<b>2,562</b>	<b>4,392</b>	<b>787</b>	<b>7,741</b>
<b>Connected during the month.....</b>	<b>4</b>	<b>7</b>	<b>4</b>	<b>15</b>
<b>Total.....</b>	<b>2,566</b>	<b>4,399</b>	<b>791</b>	<b>7,756</b>

Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

AUGUST, 1928

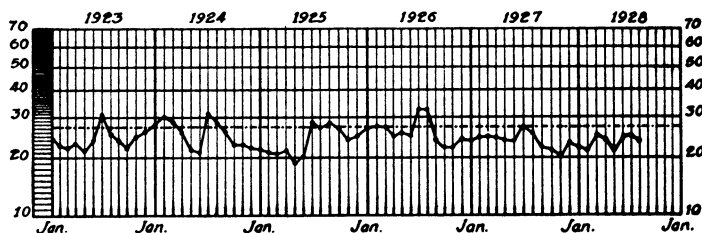
No. 8

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY of MANILA*



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
LEONCIO LOPEZ-RIZAL, M.D., *Member*  
EUSEBIO D. AGUILAR, M.D., *Member*  
TEOFILO CORPUS, M.D., *Member*  
REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
Overhauling and the Prolongation of Life, by Dr. JOSE P. BANTUG....	393
The Aftermath of a Fiesta, by Dr. JOSE P. BANTUG .....	400
Mr. Business Man, Have You Taken Your Vacation? .....	401
Health Propaganda, by Dr. JOSE P. BANTUG .....	402
Circulars .....	406
Food Preservation for the Unfortunate Lepers, by Mr. TOMAS GOMEZ, Jr. ....	415
Miscellaneous .....	417
General Statistics .....	419



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**AUGUST, 1928**

**No. 8**

**OVERHAULING AND THE PROLONGATION OF LIFE**

**By JOSE P. BANTUG, M.D.**

**I. IN INFANCY**

The human machine, like any other, needs a thorough overhauling once in a while. The more systematic is this done the more benefit will accrue to the subject. A periodic medical examination, therefore, even in the absence of subjective symptoms, is an asset in the life of an individual. We are beset by the elements and the germs of disease are all about us, that were it not for our bodily resistance, either inherent or acquired, we shall more or less be incapacitated with disease through life. It is, therefore, necessary for us to be ever watchful so that the least inroad of any disease, however benign, may be checked at its inception.

Children have a right to be born rightly, and any prospective mother, however humble, may receive the necessary instruction, either from a district nurse or at any of the health agencies, like the Philippine Health Service, with its dispensaries and hospitals, the Office of the Public Welfare Commissioner, including the puericulture centers operated by it in the different provinces, the American Red Cross with its provincial chapters, and other like organizations to insure a healthy delivery. In the first place, where the services of a trained nurse cannot be had, she can see to it that a midwife uses only perfectly clean utensils and rags, and that her hands are thoroughly washed with soap and hot water before assisting at actual labor. Unnecessary handling must be avoided. In cutting the cord only sterile scissors should be used. The thread must likewise be sterile. In tying the knot, care should be used that it is done

firmly to avoid any possibility of hemorrhage later. It should not be cut close to the navel but a safe margin allowed by leaving from 2 to 2½ inches of the cord and tied at both the proximal and distal ends. The child must be accustomed to have regular hours of feeding as well as regular hours of sleep. It is conducive to bad habits to feed the child every time it cries. Crying is not always the sign of hunger. It may be of discomfort. See if it is not overburdened with clothing during a hot day, or lacks the necessary wrapping on a cold one. It may be a pin that is causing all the trouble. The child must be trained to have regular bowel movements, once or twice a day should be considered normal. The child should be taken to the dispensary once a week, or every two weeks, to be weighed to see whether it gains regularly in weight or not. After the first week, but inside the first month, the child must be vaccinated against smallpox. The parents must understand that the child may be vaccinated even immediately after birth, and that there is absolutely no harm in it. The fact that some children are born with smallpox eruption, at different stages of development, only proves that the child even in its mother's womb is liable to contract the disease.

When the child has passed the trials and tribulations that beset its tender life and succeeds in reaching the third or fourth month of its existence, one of the greatest dangers that may befall him unsuspectedly is infantile beriberi. Infantile beriberi is most common under the first six months of life, and is usually transmitted by the mother thru suckling her infant, although, she herself, may not be aware that she has the disease, except perhaps some slight numbness in the extremities. The child itself may not show any preliminary subjective symptoms until the day of attack, although, oftentimes, one sees a bluish discoloration around the mouth. In more pronounced cases a whining cry may be observed, the voice is altered, the urine scanty. Breast feeding need not be discontinued, but both mother and child should be given regular treatment with tiki-tiki extract. This extract may be had free at all of our dispensaries, hospitals, and offices of district health officers and those of presidents of sanitary divisions. The dosage is as follows: Under 1 month old, ½ teaspoonful twice a day; from 1 month to 6 months, 1 teaspoonful, twice or three times a day, according to the severity of the symptoms: after 6 months, if the child appears to have fully recovered, the treatment should be discontinued.

In pertinent cases, the doctor should be summoned.

## II. THE PRE-SCHOOL CHILD

During the pre-school period, the child is most liable to contract the various communicable diseases, notably smallpox, dysentery, measles, and the commoner skin diseases. It is at this age, also, between the fifth and sixth year, that the so-called sixth-year molar appears, and extreme care is necessary in order that the permanent teeth do not become deformed. With our present knowledge of preventive medicine, we are now able to prevent several of the most acute infectious diseases, which, in times past, have wrought havoc in the community. Vaccination against smallpox is an absolute prevention against the disease, and by the employment of anti-cholera and anti-typhoid vaccines, much has been done to prevent and actually combat an epidemic of either disease. Anti-dysentery serum has proven its worth in the treatment of the disease, and by the injection of toxin-anti-toxin for diphtheria, on a nation-wide scale, in the United States, sanitarians are confident that by 1930, they shall have stamped out the inroads of that particular disease.

The one skin disease which is very prevalent among young children is the *itch* or scabies, *sarna* in Spanish and *galis* in Tagalog, and there is an erroneous notion among country folk that the disease must be let alone to follow its natural course, as active treatment will be harmful to the child. The itch may not be serious in itself, but it is a source of bodily discomfort, besides undermining the health of the child and making it liable to contract other and more serious diseases, besides becoming the starting point of some other disease of the skin.

Our sanitary inspectors have been trained in the use of simple remedies, and people living in out-of-the-way places should come to them for advice and treatment, or else wait for the doctor to come to the local dispensary which he is obliged to attend on stated days.

Another very important disease at this stage of life is the infestation with intestinal parasites. Were a survey made of this type of children, especially among the poorer classes of the population, we shall not be surprised to find out, if, upon proper examination, 100 per cent of them are infested. We have been so accustomed to regard intestinal parasitism as of slight importance that we are likely to pass it by without adequate treatment. It is true that it produces little or no outward manifestations, and the subject may not be aware of their presence, but

it was found to so undermine the vitality of the human organism as to affect the general mortality rate as was shown in Bilibid Prison. After the introduction of sanitary improvements therein, the death rate was reduced from over 200 per 1,000 prison population to over 20, when it became more or less stationary, until the prisoners were rid of intestinal parasites, and the general death rate came down to about 14 per 1,000 a year. That, we think, was a conclusive proof of the harmful rôle of intestinal parasites in human vitality.

### III. ADOLESCENCE

The most frequent disease in the adolescent period of life is, without question, tuberculosis in all its forms. Statistics show that from the age of 15, there is a tendency to increase progressively down to about the 50th year of life, as the figures below will show:

In 1918 of 31,890 who died from all forms of tuberculosis, 1,247 died between 15 and 19 years; 5,274, between 20 and 29 years; 5,931, between 30 and 39 years; and 6,056, between 40 and 49 years. It will thus be seen that tuberculosis is essentially a disease of early adult life, when the productive power of man is supposedly at its best. The Filipino is especially predisposed to the disease, because of his poor physical inheritance, his viciated environment, the presence of intestinal parasites in a great majority of them, and the nature of his diet.

The distribution by months for the year under discussion, shows that the months of highest mortality are October, November, and December, when catarrhal affections of the respiratory tract are of frequent occurrence, undermining further the already low vitality of the population. Tuberculosis depends upon a great many factors, but one of the most predisposing are faulty housing and living conditions. Treatment of the sick in its early or incipient stages is usually neglected, and more often than not, attributed to the prevailing weather, and the disease is allowed to continue its course until quite late, when remedial measures are costly and have to be prolonged for indefinite periods. It is, therefore, necessary to emphasize the importance of early treatment of specially lung conditions, so as to nip the disease out at the beginning. Then, it is easy and less costly. In the Philippines, where according to autopsy findings, one out of three persons has been found to have been affected with tuberculosis sometime during life, it behooves all

of us to be always on the lookout. A medical examination, especially when failing in health for some unknown reason, losing weight or appetite, or suffering from lack of sleep without apparent cause, will prevent the development of more serious symptoms. Cure in incipient tuberculosis is the rule and in the moderately advanced type, arrest may be effected only with great effort.

The human body is like a machine. It needs cleaning and oiling now and then.

#### IV. EARLY ADULT LIFE

It is a trite observation, confirmed by scientific investigations, that the Filipinos matures early but he also dies early. While it is true that no one country in this wide world can monopolize everything that is good and that in the onward progress of our people, foreign influences must be let in with liberality, yet, we ought to be discriminating enough to adopt only those that will make for our material and spiritual greatness. Our youth of today are but too willing to give preferences to outward appearances rather than for what is good for his healthy growth. The shocking conditions revealed in the several dormitories in the city, in a survey made by the University of the Philippines, disclosed the fact that while most of the students are costumed with the latest of styles, they were found to be poorly and deficiently fed. What they pay for board is so small as to leave no alternative to the managers of the place but to feed them accordingly. And yet, these students receive from their parents a regular allowance sufficient for them to secure better food. The trouble is that the student's budget is unevenly balanced. Too much goes for clothing and other luxuries, too little for food. This is one of the factors of the predominance of tuberculosis in early adult life in the Philippines, because not only is the condition found among students, but also among the people in general, especially those of the middle and lower classes. Our remark in this regard should not be misunderstood. What we wish to bring out is the fact, that, although a food may be sufficient in quantity, it oftentimes lack in quality in not having the different elements in proper proportion to make a balanced diet.

The youth's love for dancing is very general, and while we are not against it, when indulged properly and sparingly, yet

when indulged in excess, is the means of undermining his vitality, thus exposing him to contract lung diseases especially. It is a common experience that many of the lung troubles have their beginning at the dancing halls. Sweating and tired, he sallies forth into the outside air, many times improperly garbed, and the result is a common cold, if not worse. As many of us are tuberculized soon after birth as the researches of Guerin and Calmette have shown, we are thus giving a chance to the dormant germs of tuberculosis to reactivate, develop, and make a headway.

Living in crowded quarters, especially in cities like Manila, Cebu and other places, is another factor in the development of tuberculosis no less important, and the manner how we sleep decreases still further the amount of fresh air that we breathe. Some quarters, especially in Intramuros and San Nicolas, are dark and ill ventilated, and at night, doors and windows are closed, and in many of them, especially when there are small children in the family, a small smoky kerosene lamp is left lighted all through the night, reducing still further the supply of oxygen. And when mosquitoes hover about, what does many a poor laborer do but cover his head with the sheet, breathing in the minimum supply of fresh air, a little more than enough to sustain life.

In the light of the above facts we can formulate the following equation:

POOR FOOD PLUS INSANITARY LIVING CONDITIONS EQUALS TUBERCULOSIS.

## V. MIDDLE LIFE

In middle adult life, say from the age of 40 onward, is when a man begins to pay his back debts, especially if he had led a fast life in his younger years. How true it is that Inca's old saying: "The gods are wise. They make our pleasures the very instruments to chastise us." Insidiously, and like a thief in the night, the vital organs, one after another, will show slight disfunctionings which the subject may be not be aware of, unless a thorough medical examination is made by a competent physician. Those who have indulged in the pleasures of the table may exhibit slight disturbances referable to the digestive functions, and the kidneys which have been functioning normally up to this time, may show such slight deterioration as

to pass off unnoticed by the subject himself, were not the services of a clinical laboratory are called into play. The liver, another vital organ, may likewise be out of gear long before the patient becomes aware of his condition, and only a very careful examination will reveal the true state of affairs.

In spite of the progress of medical science in the Philippines, we, as a people, still practice the habit of not summoning a physician until a disease has gotten a firm hold on the patient, and it is only by sheer miracle that he recovers. Sometimes, we have a firmer faith in the remedies in our *herbolarios* than in our medical practitioners. An anecdote related by the late Dr. Vicente de Jesus is worth repeating in this connection. He used to tell the following story: "If a rich man happens to have stomach ache, he will endure it all through the night before sending for a physician, but try to prick his ears and the next you know is that a criminal complaint has been filed against you at the local court." If the patient dies, the doctor is wanting in skill. If success has attended his ministrations, he is the best of men, until a bill is sent for his services. Then, as Budin tells us, he looks like the devil incarnate to his former patient. The Chinese has one advantage over us in this regard. It is said that a Chinese physician is paid for warding-off disease from the family, and if any member becomes ill he is not paid his salary.

The point we wish to stress on this occasion is the fact that, in adult life, the human machine should not be let working at full speed, and that a periodic examination of the functions of such vital organs as the kidneys, liver, stomach, and lungs, will be the means of lengthening life by a few years.

## THE AFTERMATH OF A FIESTA

By JOSE P. BANTUG, M.D.

The observance of Thanksgiving Day embodies in it one of the best traditions of the American people. This is something that will take deeper roots in the hearts of the people as the years pass by. For it teaches that we should be thankful to Divine Providence for the gifts received during the year. As a people we should be thankful also that He had spared us from serious epidemics during the past year and has permitted us to enjoy continued health.

There is, however, another phase of the celebration which we are likely to forget. As a people we are lovers of *fiestas* and are wont to celebrate "Tirando la casa por la ventana" as the Spanish saying goes, and we are offended when visitors coming to our house refuse the proffered eats and refreshments, even under the protest that they have had already their fill elsewhere. Results: indigestion and other bodily ills the very next day. In years gone by, cases of dangerous communicable diseases occurred in places far apart that could not be explained satisfactorily by our then methods of study, until the theory of carriers as the origin of epidemics was advanced and verified. It was found that people participating in *fiestas*, especially in towns where there was a large assemblage of people from different places, get ill from which other cases radiate. Once the source of water supply is infected, the epidemic assumed larger proportions. That is why the Philippine Health Service has adopted the policy to watch over the sanitation of town *fiestas*, especially in the handling of foodstuffs.

Moderation in the manner of eating, especially during a *fiesta*, should be carefully observed, in order that the aftermath may not be of serious consequence to the participants.



## MR. BUSINESS MAN, HAVE YOU TAKEN YOUR VACATION?

It was a wise administration which provided early in the present régime that employees in the classified service should enjoy certain leave privileges during the year. This practice is in consonance with the physical needs of the body. Ordinary rest is not enough when one has to return to daily routine. Sooner or later that monotony will tell on the health of the individual.

*Neurasthenia* or *shattered nerves* is the result of overwork. We are not aware that commercial houses allow their employees to take a vacation for a number of days with pay. The employer is better off as he may use the week-ends for purposes of vacation. Not so with the ordinary employee. A vacation to be profitable should be free from worries and to be enjoyed some other work must be taken up. Vacation is nothing more than freedom from routine, altho we can employ it in a diversity of ways. Life in the open field is probably the healthiest, with occasional handling of the adz. Angling is a good past time, especially when one lives near a river or lake. To many other activities can one have a resort, but it is essential that the scenery be varied from the one he has been accustomed to. There lies the real profit from a vacation.

## HEALTH PROPAGANDA <sup>1</sup>

By Dr. JOSE P. BANTUG

The question of health propaganda is probably as old as organized public health work itself, but it is only during these last few years that it has received due attention on the part of public health administrators so that at the present time it is part and parcel of every up-to-date health organization. Indeed, it is difficult to visualize any distinct advance in public health work without a definite program on public health education and publicity. The establishment of the Section on Public Health Education and Publicity in the Philippine Health Service answers a crying need for a well coördinated, directed, and extensive activity along these lines. Many of the present difficulties that the Service is meeting at every step of its career, especially with regard to the work against beriberi, malaria, leprosy, and other communicable diseases, will be materially enhanced by creating among the people a strong health conscience, the lack of which we deplore today in successfully carrying out our work against the prevention of disease and the promotion of health.

In the Philippine Islands, the work has heretofore been accomplished in a rather desultory manner without any definite program and without any set aim. The printed page was availed of largely, but it is well known that it is only the cultured class that could be reached, so that, it might be said, not much was accomplished. With the disappearance of epidemic diseases, our aim should be to raise the standard of education along personal hygiene and public sanitation among the masses of our population, so that even if a case of communicable disease should appear in their midst, they will be provided with the necessary information how to avoid it, prevent its further spread, and promote the health of the community. It is needless to state that the Service has availed itself of every known opportunity to spread its gospel, with emphasis now on coördination and

---

<sup>1</sup> Delivered by Dr. Jose P. Bantug at the Philippine Columbian Club, Taft Avenue, Manila, before the delegates of the First Convention and Institute of Public Health Nurses, April 11th to 17th, 1928.

graded efforts. Leaflets, posters, daily news for newspapers and periodicals, personal talks, practical demonstrations, illustrated lectures, bulletins, the health-coach, the healthmobile, participating in garden-day celebrations and carnivals, will be and are being resorted to, to make good our motto, "For a healthy nation." It is a common experience that the mind is more easily impressed by what it receives through the eyes than what it gets through the ears, so that posters, practical demonstrations, and carnival participations have their distinct usefulness in conveying sanitary lessons to the people. As public health workers, however, you come into closer touch with the homes of the great mass of the population and your influence therein might be taken advantage of to further their knowledge in hygiene and sanitation. If, as has been said, "Charity begins at home," we should bear in mind always, what our beloved Director has emphasized in his inaugural address at the opening of this First Convention and Institute. In other words, we should be very careful that whatever we say should always carry conviction supported by our unblemished conduct and exemplary life. The presence of a communicable disease in a household should be taken advantage of to impress upon the minds of the people therein the nature of the disease, how it was acquired, and what would be its possible effect upon the patient and upon those living with him, were the principles of personal hygiene and sanitation are neglected. Then, in as simple words as possible, tell them what steps should be taken in order to prevent the disease.

In your house-to-house visit, you will not only observe the living conditions in the individual houses but of the whole neighborhood as well, and in sympathetic words, picture the dangers that may arise from the presence of stagnant water in the yard and the diseases that it may give raise to through the breeding of mosquitoes from insanitary latrine and how intestinal diseases may be spread in the locality and their proper disposal of house wastes nuisances they may originate aside from their unesthetic aspect. The presence of many of the house pests we, oftentimes, owe to our own neglect. When mosquitoes abound, investigate a little, and you shall find in or about the house or not far from it, some stagnant water or some running stream with grassy banks, which gives rise to the trouble. If flies are present, it may be that someone, either in the house or in the immediate neighborhood, has been careless in disposing of the house refuse. Rats may be a veritable pest, but if

we would avoid hollow partitions, and cover in the case of nipa houses, the open ends of bamboo poles, with some kind of cement, or even of simple mud, you give no chance to thrive. By keeping tight the covers of your garbage cans and not necessarily expose your pantries to their depredations, you will find that they will desert the house. Of course, the use of the trap is advisable in the majority of cases, and poison may be used to some extent. In your dealings with the common people, especially in the provinces, it is very necessary that you should be somewhat diplomatic. It is not enough to say, "Do this, or do that," without hurting their feelings. You know their psychology very well. In imparting a health lesson it is necessary to do this or that thing in order to avoid disease, especially that of a communicable nature, and that it is necessary to repeat it again and again on every available occasion so that the lesson which we wish to impart to them will almost become second nature. It is important to ascertain the seasonal prevalence of certain diseases in the community where you are detailed, and then start a campaign for the prevention of such diseases, well ahead of time. Let me give you an instance. It is a well-known fact that dysentery prevails during the rainy season. What I will do would be to acquaint the people individually or collectively about the nature of the disease and how it may be prevented. I will see to it that nothing but safe water is used for domestic purposes. It is not enough to tell them that they get their water from an artesian well. It is very important to advise them how it should be gotten from the well transported to the house and kept uncontaminated. That in this operation the hands should never be dipped in. That once in the water deposit, it should only be drawn from a spigot or faucet. That, as the disease, is transmitted through food and drinking water, all cooked foods should be placed in proper and clean receptacles, and protected from dust as well as from flies. One good rule to follow is to eat nothing which is not warm. The house toilet is one of the most positive sources of danger and it is very important, especially in rural communities, that an Antipolo closet be built for the members of the household and that care is taken in its preservation so that it will not become a nuisance. In other words, an Antipolo closet, when properly kept should not emit bad odor, or be a breeding place for mosquitoes. In this connection, it is very important that the lid of the seat be made self-closing, and that

the end of the vent pipe be covered, either with a piece of wire gauze, or what is more practical still, especially in the barrios, is to cover it with an empty tin can with several perforations. Washing of the hands after coming from the toilet should be insisted upon. Another instance, which can be cited here, is the prevalence of catarrhal affections during the cooler months of the year. In this case, it is necessary to impress upon the people the importance of proper body wraps and that, early treatment is very necessary, especially in the more severe cases and when it is prolonged for more than ten days. It should be remembered, that many a recurrent or protracted colds are beginning tuberculosis, especially among us, where according to autopsy findings, of 10,000 cases examined, more than 90 per cent were found to suffer, at one time or another, from this dreaded disease. Moreover, were we to believe the modern theories of Calmette and Guérin, the child is tuberculized at the end of the first week of life.

You are well aware, how the disease is spread, and I need now dwell upon the various steps which should be taken to prevent it. You should not forget, however, that tuberculosis is second to malaria only in the number of victims that it claims every year. Moreover, your own personal experience will tell you that it is the most common disease in the Philippines, and that it respects neither age nor sex, and that it is found among the rich as well as among the poor. The rôle of promiscuous living in the spread of tuberculosis should always be emphasized among the members of the family of the sick and what may be done by the exercise of personal hygiene to prevent its spread among the other members of the family.

While it is very important that our school children should be taught the rules of health not much can be accomplished if the grown up people are neglected in this campaign. The work should be systematically and simultaneously carried out. Your rôle, therefore, in spreading the gospel of health is almost as important as that of the physician, and with proper spirit and the exercise of tact, you will be able to transform the habits of a generation and lighten the burden of the sanitarian of the future. I thank you.

# CIRCULARS

PHILIPPINE HEALTH SERVICE  
MANILA

ADMINISTRATIVE }  
ORDER No. 5 }

MAY 11, 1925

**Subject: SANITARY MAINTENANCE OF PUBLIC MARKETS**

1. The following regulations approved by the Secretary of the Department of Public Instruction are hereby published for the information and guidance of all concerned as an administrative order of this Service.

## REGULATIONS FOR THE SANITARY MAINTENANCE OF PUBLIC MARKETS

In addition to the provisions of Chapter 71, Title II, sections 706 to 728, both inclusive, of the Revised Ordinances of the City of Manila, the following rules are hereby promulgated for the sanitary maintenance of public markets located within the city limits.

**RULE I.** The superintendent of a market shall be responsible of the enforcement of section 711 of the Revised Ordinances, City of Manila, and for the keeping in a cleanly and perfectly sanitary condition all the aisles, divisions (dependences), stalls, floors, walls, and utensils as well as the whole track of land belonging to said market. Provision shall also be made for the cleaning of the market at least once daily before five o'clock a. m. or better after the close of business of the day; and the said superintendent shall at all times keep free from garbage and rubbish not only the market building but also the whole track of land occupied by it, including that part not covered with buildings.

**RULE II.** On the track of land belonging to a market, either on that part covered with buildings, or on that part without buildings, no sheds, lancares, or other similar appurtenances such as kitchens, stores, living quarters, dormitories, etc., will be allowed except those which may appear in the plans and conditions approved by the Director of Health, or his authorized representative.

**RULE III.** The occupation of any portion of the market as a human habitation is forbidden, nor will any additional construction even though authorized by the Director of Health be used as a human habitation.

**RULE IV.** No temporary deviation shall ever be permitted from the requirements of section 717 of the Revised Ordinances. In a word, no stall shall ever be assigned either temporarily or permanently for selling any other articles different from that for which the said stall was specifically assigned.

**RULE V.** For the collection of garbage and rubbish, all markets shall be provided with receptacles of the fly-and-rat-proof type, and such recep-

tacles shall be placed in the most conspicuous and convenient places in the market.

**RULE VI.** Every market shall be provided with a public toilet with two apartments, one for men and the other for women, which toilet shall be constructed in accordance with such plans as the Director of Health or his authorized representative may furnish and which shall be kept at all times in perfect state of repair and in sanitary condition.

**RULE VII.** Toilet facilities will be located near the market and washing facilities to enable those who intend buying to wash their hands before handling the food, especially after coming from the toilet.

**RULE VIII.** In times of epidemics, such as cholera, typhoid fever, dysentery, and like diseases, all persons before being allowed admission to the market will be required to wash their hands in a disinfecting solution, said disinfecting solution to be furnished by the sanitary authorities. During the continuance of such epidemics the water used in the ordinary flushing of the floor of the market will be substituted by a disinfecting solution and the tables and shelves of the market shall be washed with a like solution.

**RULE IX.** All person who are engaged in the sale and handling of articles of food either manufactured or cooked such as bakery products, confectionery, dairy products, refreshments, and drinks shall be provided with a certificate of health from the Director of Health or his authorized representative to the effect that they are free from any dangerous communicable disease and that they are not bacilli carriers of such diseases and have been vaccinated against smallpox, cholera, and typhoid fever.

**RULE X.** The persons in charge of sales in the markets, either wholesale or retail, of food products shall be neat and clean at their appearance. They shall also provide themselves with the necessary towels for the hands and clothes for the cleansing of the stalls. Clothes for the hands shall be of white color or of unbleached cotton.

Said persons shall likewise keep scrupulously clean at all times the utensils for the transaction of business, such as knives, forks, spoons, weights, cases, seats, etc., and are obliged to clean, destroy, or substitute such utensils whenever any employee of the health service or of the market orders so unless either for cleanliness or unfitness for further use.

**RULE XI.** The sale of any articles on alleys, sidewalks or any space other than the stalls properly numbered will in no case be permitted.

**RULE XII.** The stalls available in a market shall be rented preferably for selling fresh vegetables, fish, meats, and other articles of food of prime necessity. Commencing on the date of the approval of these rules, the occupation of vacant stalls by restaurants, grocery, or sari-sari tiendas shall be considered temporary and the permit for such occupation may be cancelled after one-week notice to give preference to the sale of fresh vegetables, fish, meat, and other articles of prime necessity. This provision shall apply only to vacant stalls or to those which may be vacated in the future.

**RULE XIII.** All foods shall be sold from tables. These tables will be made entirely open beneath 75 centimeters in height, without drawers, and should be thoroughly scrubbed every night at the close of business. The tables and meat blocks should not only be scrubbed every night, but

their surface should be made and kept always smooth so that food cannot lodge in cracks or in rough and decompose.

**RULE XIV.** At the close of each day's business and before going home the owners or agents of any fixed or transient spaces in a market shall clean their spaces, considering as their spaces the floor, shelves, and area of land rented. They shall also remove the dirty clothes and place the rubbish and garbage in the containers which are placed for the purpose in the markets.

**RULE XV.** The evisceration, the skinning, or any operation other than the cutting of meat to facilitate its sale is strictly prohibited to be done in the market or in a space or portion belonging to same market.

**RULE XVI.** Under no pretext whatsoever will any person be allowed to remain, standing, sitting, or laying down in the tables, counters, etc., where any article of food is being exposed for sale or sold, and neither shall any animal be permitted within the limits of the market.

**RULE XVII.** Food that is being sold cooked will be served hot and will be maintained at all times well protected against contamination by flies or other insects, and against dirt. All articles of confectionery, bakery, dairy and ice cream, etc., will likewise be properly protected.

Food that is being sold raw such as beef, fish, etc., will at all times be protected from flies and other insects.

**RULE XVIII.** All kinds of raw, cooked, prepared, or natural food will not be unnecessarily handled by sellers or buyers, and the prepared and cooked food will be served by means of forks, spoons, dippers or similar utensils and not with the hands. The seller is hereby made responsible for the carrying out of this requirement under penalty of revocation of his or her license.

**RULE XIX.** The use of water not obtained from a source, certified as safe by the Director of Health, for drinking or for use in connection with food, or washing of plates, glasses, cups, forks and other similar objects is forbidden in a market. Such water as is permitted by the health authorities will be kept in a container with faucet, and guarded at all times against contamination. Under no circumstances water offered for drinking purposes will be drawn except from the above mentioned faucet.

The water containers will be washed daily with boiling water or a disinfecting solution recommended by the Director of Health or his authorized representative.

Tuba or any other prepared or fermented drink will be maintained under the same conditions as drinking water.

**RULE XX.** Restaurants conducted in public markets shall be provided with hot water for washing of plates, glasses, cups, dishes, forks, spoons and other similar objects and the water used once for such purpose shall not again be used.

**RULE XXI.** The sale of any kind of damaged food or food in bad state of preservation will not be permitted in public markets. All damaged food or food in the stage of decomposition shall be condemned and destroyed by health officers, and when food is condemned or destroyed, the health officers will issue to the owners a receipt stating the quantity of the confiscated food keeping at the same time a record in their offices of the kind and quantity of the destroyed food.



**RULE XXII.** The use of printed paper or paper already used as well as banana leaves or leaves of other trees for wrapping or covering any kind of foodstuff or bakery and confectionery products or other similar articles which are sold or offered for sale in any market is absolutely prohibited.

**RULE XXIII.** The sanitary personnel has the authority to exact of the employees of a market the strict compliance with the provisions of these regulations, and shall notify the Director of Health and at the same time as the superintendent of a market of any violations of these regulations.

(Sgd.) JACOBO FAJARDO

*Director of Health*

Approved, April 13, 1925.

(Sgd.) E. A. GILMORE

*Secretary of Public Instruction*

2. The preceding regulations shall take effect sixty days from date of its publication in the Official Gazette of this order.

(Sgd.) JACOBO FAJARDO

*Director of Health*

---

PHILIPPINE HEALTH SERVICE  
MANILA

ADMINISTRATIVE }  
ORDER No. 58 }

AUGUST 6, 1928

**Subject: SANITARY CONDITIONS IN PUBLIC MARKETS**

1. The market is a permanent feature of our community life. Whether we like it or not it exerts a potent influence in the life of the people. It is the meeting place for the exchange of our food products but resulting as well in the social intercourse of the masses of the population which can be taken advantage of in the dissemination among them of sanitary information. Several times a day people of all conditions in life have to resort to it to provide themselves with their daily necessities. Food products are distributed here to all the four corners of the municipality. It is, therefore, evident that the maintenance of sanitary conditions in all market buildings is of primary importance in the health of the community. As sanitarians we can make them either a power for good or a power for evil. Lack of proper supervision may originate sickness and death by allowing tainted, decayed, decomposed, spoiled, diseased or infected food for sale.

2. Many of the public market buildings are at present substantially constructed, and instead of the dirt floor, which may be poorly drained besides, they are now made of impervious floors and concrete stalls, permitting the sanitary maintainance of these establishments. Time and again circulars for the sanitary maintenance of these buildings have been issued, but a constant rigid supervision is necessary in order that the rules and regulations so promulgated should bring the desired results. It is, therefore, enjoined with all District Health Officers and Presidents

of Sanitary Divisions to see to it that special care is taken in the inspection of these places. One of the most important adjuncts to a public market is a sanitary closet. It is realized that upon the completion of a new market building, separate toilets for men and women are also installed. But the sanitary maintenance of these places should always be insisted upon otherwise they may give rise to disease of intestinal origin. In this connection, it is urged upon all concerned to observe insofar as they are applicable to local conditions the *Regulations for the Sanitary Maintenance of Public Markets*, issued by this Office for the City of Manila, dated May 11, 1925, as Administrative Order No. 5.

3. Any laxity in the observance of these regulations will be dealt with accordingly.

(Sgd.) JACOBO FAJARDO  
Director of Health

---

PHILIPPINE HEALTH SERVICE  
MANILA

CIRCULAR }  
No. 283 }

AUGUST 3, 1928

Subject: ENFORCEMENT OF STREET CLEANING DEPARTMENT OF  
MINDANAO AND SULU

1. The unnumbered circular, dated July 7, 1928, of the Director of Non-Christian Tribes is hereunder transcribed:

"THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
"DEPARTMENT OF THE INTERIOR

"BUREAU OF NON-CHRISTIAN TRIBES  
"MANILA

"UNNUMBERED }  
CIRCULAR }

JULY 7, 1928

"Subject: SECTION 117 OF THE ADMINISTRATIVE CODE OF THE  
DEPARTMENT OF MINDANAO AND SULU, STREET CLEAN-  
ING—ENFORCEMENT OF.

"It has come to the attention of this Office that in some organized municipalities under its jurisdiction the local authorities do not enforce the provisions of Section 117 of the Administrative Code of the Department of Mindanao and Sulu which provides:

"*Street Cleaning.*—Every householder outside the fire limits of any municipality shall keep open and clean the street, or road and ditch in front of his building for a distance of not to exceed fifty feet on either side of the middle line of the building, and failure to comply with this regulation shall subject such householder, upon conviction, to a fine of not to exceed twenty pesos.'

"It is probable that such non-enforcement is due to the general impression that this section of the Code has been impliedly abrogated by the decision of the Supreme Court in the case of 'The United States *versus* Gaspay' (33 Phil., 96, 97) whereby Ordinance No. 87 of the municipality of Pastrana, Province of Leyte, which contained similar provisions, was declared null and void. This impression is entirely erroneous inasmuch as a close study of that decision will readily show that it does not and cannot affect, much less abrogate, said section of our Administrative Code.

"It is a well-established principle that 'municipalities possess and can exercise only such powers as are expressly or impliedly granted by law and those which are necessarily included and essential to the declared objects and purposes for which municipalities are organized. Any fair reasonable doubt concerning the existence of power is resolved against the municipality and the power is denied. All acts beyond the scope of the powers expressly or impliedly granted are void.'" (Dillon's Municipal Corporations, Vol. I, Fourth Edition, paragraph 89.) The municipal ordinance above referred to required every owner of a lot situated in the municipality of Pastrana to periodically clean one-half of the street lying in front of and parallel with his lot. One Jose Gaspay was accused and twice convicted of its violation. Gaspay, on appeal to the Supreme Court, questioned the constitutionality of this ordinance. The Supreme Court, in declaring the ordinance null and void, held: 'There is no provision of the \* \* \* Code (Municipal Code, now Administrative Code), which authorizes municipal council to force the residents of a municipality to clean any part of a public street in front of their respective properties or which empowers them to enact ordinances to that effect. The provisions of subsections (j) and (l) of section 39 of said Code (Municipal Code) do not warrant the inference that municipal councils possess those powers or that they are authorized to impose that obligation upon the residents of the municipality.'

"It will be noted that the Supreme Court declared Ordinance No. 87 of the Municipal Council of Pastrana null and void, not because it was unconstitutional, but on the ground that it was beyond the power of the municipal council to enact it within the meaning of subsection (j) and (l) of the Municipal Code (now subsections (c) and (m), respectively, of section 2242 of the Administrative Code of 1917). In other words, the ordinance was *ultra vires* and, therefore, null and void. By analogy, it may be assumed that if section 117 of our Code were a municipal ordinance enacted by the municipal council of one of our municipalities pursuant to subsection (o) of section 2625 of the Administrative Code of 1917 (this section corresponds with section 2242 of the same Code) it would no doubt come within the derogatory effect of the aforesaid decision of the Supreme Court. But section 117 of the Administrative Code of Mindanao and Sulu is a standing provision of a general law which is now in full force and effect in all the municipalities under the jurisdiction of this Bureau and is not, therefore, affected by said decision. As long as it is not revoked by competent authority, it is our duty to give it force and effect.

"In view of the foregoing, the enforcement of the section in question of the Administrative Code of Mindanao and Sulu is hereby enjoined upon

all the officials concerned and if ordinances inconsistent therewith have been enacted, the same must be rescinded at once.

"It is requested that the contents of this circular be transmitted to all concerned in accordance with the provisions of Circular No. 1 of this Office, dated August 11, 1920.

(Sgd.) "LUDOVICO HIDROSOLLO  
*Director*

"To all PROVINCIAL GOVERNORS AND OFFICIALS UNDER THE JURISDICTION OF THE BUREAU OF NON-CHRISTIAN TRIBES."

2. In this connection, district health officers, presidents of sanitary divisions, and all others concerned are advised to see to it that the provisions of section 117 of the Administrative Code of the Department of Mindanao and Sulu are duly enforced.

JACOBO FAJARDO  
*Director of Health*

---

PHILIPPINE HEALTH SERVICE  
MANILA

CIRCULAR }  
No. 284 }

AUGUST 7, 1928

Subject: INSPECTION OF SPOILED CANNED GOODS

1. The following letter is transcribed for the information of all concerned:

"RURAL TRANSIT Co.  
"CABANATUAN, NUEVA ECIJA

"JULY 31, 1928

"Major A. PARKER HITCHENS  
"c/o Governor-General's Office  
"Manila.

"MY DEAR MAJOR:

"The undersigned, as you know, does considerable traveling on the road, and due to the rainy season at this time, is quite often caught on the road where there is not much conveniences for passing the night or securing chow. In such cases, he is usually obliged to sleep in his car and go to some small *tienda* along the roadside to secure whatever chow available, whether good, bad, or indifferent.

"Through these experiences, we find that a greater share of the canned goods which are being kept and offered for sale by these small outside places are spoiled, which fact can be easily told by pressing on the end of the tins. In some places, one will have to examine a dozen or more tins in order to find one that is not swollen.

"We are of the opinion that a great deal of stomach trouble in the way of ptomain poisoning and dysentery is caused through people eating such chow in ignorance. We are very much surprised to see how few people know the difference between spoiled and good canned goods.

"We are bringing this to your attention, believing that you can bring same to the attention of the Bureau of Health in a much better form than ourselves, and we think that an investigation should be made and all such condemned.

"Thanking you for whatever action you may take in the matter, we wish to remain.

"Yours truly,

"RURAL TRANSIT COMPANY  
(Sgd.) "D. L. MINNICH

"Manager"

2. In this connection it is hereby urged upon all district health officers and presidents of sanitary divisions to issue the necessary instructions to the sanitary personnel to the effect that a systematic inspection of all *tiendas* handling canned goods be made, and as frequently as possible, in order to detect tainted, decayed, decomposed, diseased, and infected canned goods, and those with signs of holes covered with lead, and proceed to their condemnation in the usual manner. They should pay attention that no canned goods in the above-described conditions are offered for sale.

3. It is easy to detect when the goods may be spoiled. The can has a swell, or a springer or a flipper or a leaker. The *swell* can is that whose ends are raised due to the development of gases within. There is a *springer* if upon the pressure of the can it returns to its former condition. A disfigured can by careless handling is a *flipper* can. The can which is corroded with holes and actually leaks and would have leaked if the holes had not been covered with lead is a leaker can. The consumption of the above-described canned goods may give rise to the so-called food poisoning, which is similar to cholera in its symptomatic manifestations.

4. A careful record of condemned canned goods, specifying its kind and quantity, owner or dealer of *tienda* from which they were taken, should be kept and reported to this Office from time to time.

JACOBO FAJARDO  
Director of Health

---

PHILIPPINE HEALTH SERVICE  
MANILA

CIRCULAR }  
No. 285 }

AUGUST 17, 1928

Subject: PREPARATION AND SUBMISSION OF WEEKLY, MONTHLY  
AND ANNUAL REPORTS

1. This office has repeatedly brought to the attention of the officers concerned the improper preparation of reports, particularly those of communicable diseases.

2. It has often occurred that weekly reports, monthly health reports, and annual reports submitted to this office, when compared with each other, showed remarkable difference in the total reported for the whole year.

3. Improper handling of permanent records of diseases coupled with the apparent lack of interest of the officers in the supervision of the preparation of reports and of the verification of the figures therein contained are believed to be largely responsible for the discrepancies in the reports submitted.

4. An illustration of the unsatisfactory results obtained in the comparison of reports stated is exposed in the following table, computed from the reports submitted last year to this office by the district health officer of one province:

Reports	Typhoid fever		Dysentery	
	Cases	Deaths	Cases	Deaths
Weekly reports .....	3	1	11	1
Monthly reports .....	4	1	17	1
Annual reports .....	5	1	78	3

5. It is needless to state from the figures in the preceding table, the purpose for which the reports are instituted, i. e., the study, control and recording of the diseases, is simply nullified.

6. To remedy the deficiency herein stated, it is hereby directed that utmost care and personal interest of the officers concerned be exercised in the preparation of all reports to avoid discrepancies thereon not only in communicable diseases but also of the total deaths. Before submitting any report, the officer should always carefully verify the figures reported.

JACOBO FAJARDO  
*Director of Health*

## FOOD PRESERVATION FOR THE UNFORTUNATE LEPERS <sup>1</sup>

On the 6th of July, 1928, there came from Manila, three women sent by the Bureau of Science to teach fruit and vegetable preservation in the Culion Leprosarium. They came to teach the unfortunates, in spite of the tradition telling them that lepers are very dangerous, and when they came, they were convinced that there was no such danger. Miss Maxima Lumain, Miss Paciencia Regalado, and Miss Magdalena Sevilla are the envoys of sympathy to the land of the unfortunates. Miss Lumain, whom I would call Miss Heaven, for the beauty of her face, the image of an Angel; Miss Regalado, simple but skillful, and a picture of Florence Nightingale; and Miss Sevilla, a typical "Bulaqueña," with the dreamy eyes of a "Madame Butterfly." These three ladies were known here, as the "Food-preservers."

Before they came to the Leper Colony, they spent one week giving demonstrations to the people of Balala, the residence of the doctors, nurses, and other employees of the Colony, not lepers. Then, they came to teach the lepers who showed much interest in the work performed under the direction of Miss Lumain. The demonstrations were done in the Hospital Kitchen, on Rizal Street, and many people went there to learn how to preserve fruits and vegetables. Besides food preservation, Miss Lumain and Miss Regalado taught them also how to make sweets and pickles. But the most artistic part of this work of the kitchen is the carving. This means the different carvings made on pickles and sweets to beautify the appearance of each piece. The food-preservers used to cut the fruits to be made into pickles in the form of wheels, stars, triangles, toys, etc., or in the form of letters, putting names, or beautiful phrases, on the article with decorations besides, at the discretion of the worker.

The demonstrations were so nicely done that all the "Hijas de Maria" so zealously guarded by the Sisters of Charity in their convent, were brought to the Hospital Kitchen to learn the work. And so with the girls of the "Evangelical Dormitory"

---

<sup>1</sup> The fourth article of a series by Mr. Tomas Gomez, Jr.

and the other women of the colony. Even the men, guided by the superintendent of agriculture in the colony, went to the place of demonstration to study food-preservation. "That work is for women, but it is not bad to learn," the men said.

And so, they went on, attending the demonstrations. It is really necessary to extend the time given to the food-preservers of the Bureau of Science, in order to satisfy the anxieties of the people here, who want to learn more thoroughly the art of food preservation due to the abundance of fruits and vegetables in this colony, an art still unknown to the general public.



## MISCELLANEOUS

---

### BATANGAS

Important accomplishments during the month were: House-to-house inspection for the detection of important communicable diseases; general disinfection of public markets and public closets; prophylactic injections disinfection of public markets and public closets; prophylactic injections against cholera, typhoid, dysentery, and smallpox vaccination, were performed by presidents of sanitary divisions, the majority of which were held in barrios.

### BULACAN

Important works accomplished were: The intensification of anti-cholera vaccination, the painting of the Sibul Springs Dispensary, and the sending of two lepers to San Lazaro Hospital.

### CAMARINES NORTE

The majority of the houses in Daet are now provided with Antipolo closets, but there are still remaining quite a big number not so provided or have their closets not completed. In the town of Mambulao, the great majority of the houses are also provided with Antipolo closets, but on account of the close location of the town to the sea, many people are using the sea for their closets.

### CEBU

In the City of Cebu a campaign against the spoiled canned food has been undertaken in all the *tiendas* and groceries, and large quantities of canned food have been confiscated and thrown away into the sea, particularly those sardines brought by the steamship *Bohol* which are 65 cases in all; and some other are still under observation waiting for the result of the examination of the samples sent to the Bureau of Science.

### COTABATO

The municipality of Cotabato, provincial jail, and Cotabato public market are in good sanitary conditions. Salunayan Peidu Pulangi and Pikit, dispensaries are in good sanitary conditions; office and records, were in order.

### ILOCOS NORTE

The Provincial Emergency Hospital is now provided with an up-to-date operating room and more surgical instruments arrived. A new arrangement of the hospital made possible the opening of big ward for eight beds for males and children and four beds for women. Thus making the bed capacity of the hospital twelve in all.

### LANAO

The general health condition of the province was fair. After two or three weeks of rains and cold, respiratory type of influenza appeared, especially among the children in Watu district. There were also five cases and four deaths of dysentery and several cases of diarrhea during the

month in the province. Measles was reported among the children in Kolambugan with no death. Above conditions, however, were not alarming and were controlled before the end of the month.

#### LEYTE

In Tacloban, there were two pumps out of order. Public market was insanitary, collections of garbage in the market was very unsatisfactory, hogs roaming at large. Carigara and Barugo were found with dirty streets and plenty of roaming animals, especially hogs, goats, and sheep. Inspector's subordinate personnel were found to be lacking of necessary instructions even on routine duties.

#### MARINDUQUE

The general sanitary condition of those places inspected were fair except the municipalities of Mogpog, Santa Cruz, and Torrijos where domestic animals were still roaming in the streets and the construction of closets was rather slow.

#### MASBATE

Works accomplished during the month were: The enforcement of the municipal ordinances concerning cleanliness, pigs, and Antipolo closets. Injection and vaccination of the school pupils against smallpox, typhoid fever, and cholera mixed.

The general health condition of the district is fairly good.

#### ORIENTAL NEGROS

Findings and action taken: Influenza was prevalent in Guihulnigan during the last two weeks of the month, and few deaths had been registered. Proper measures have been instituted against this disease. In the municipality of Tanjay there were issued 38 sanitary orders for the construction of closets and cleaning of premises during the month of August. Out of these 38 orders, 20 were complied with. Two prosecutions have been filed before the justice of the peace of said municipality, and the offended parties were found guilty and fined by the court.

#### RIZAL

Important works accomplished were: The campaign against dysentery in San Mateo, Marikina, and Montalban and for vaccination against cholera in all the municipalities; improvement of sanitary condition of cockpits, markets, and closets; physical examination of pupils; suppression of tropical ulcers in Angono, Binañonan; destruction of mosquito-breeding places in Pasay; poisoning of dogs to avoid dog bites; prevention of roaming pigs.

#### DOCTOR CORPUS TALKS TO THE SENIORS

Dr. Teofilo Corpus, the provincial doctor of Bulacan, spoke to the seniors on Friday, August 24, 1928. His object was to make an appeal on the improvement of health and sanitation. In the middle of his talk, he said: "A healthy nation is a strong nation and the most civilized nation has the highest standards." He further said that we need four things to improve our health—a balanced diet, cleanliness, adequate disposal of wastes, and an excellent water supply.

The seniors promised to follow these four things. May the juniors, sophomores, and our dear freshies follow us too.

## GENERAL STATISTICS

(Unless otherwise stated, these statistics are for the month of August, 1928)

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1928<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	8,184
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>324,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,862
<b>Total.....</b>	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,347
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,987
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,663</b>
<b>Grand total.....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, AUGUST, 1928**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	757.38	28.4	32.0	1	23.9	1	30.2	30.4
11-20.....	57.72	28.5	32.5	20	23.5	20	30.4	30.6
21-31.....	56.89	27.2	34.4	22	23.5	26	30.5	30.6

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	77.1	81.7	1	73.7	6
11-20.....	79.7	85.6	20	75.3	12
21-31.....	83.1	86.3	24, 25	79.1	26

Date	Prevailing direction	Wind			Atmidometer <sup>3</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	SW.	5,116.5	685.0	9	53.9	6.1	10
11-20.....	SW.	5,123.0	849.0	11	47.4	6.0	11
21-31.....	SW. quad	2,238.0	390.5	28	28.1	4.5	21

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	62-23	8-40	5, 10	25.7	2
11-20.....	70-05	10-10	18	63.7	9
21-31.....	50-50	9-30	22	112.1	9

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	9	7	16	60.15
Filipinos.....	596	542	1,138	44.95
Spaniards.....	4	1	5	30.13
Other Europeans.....	3	1	4	41.88
Chinese.....	38	42	80	52.78
All others.....	9	9	18	97.01
<b>Total and average.....</b>	<b>659</b>	<b>602</b>	<b>1,261</b>	<b>45.78</b>

**NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MEJIC:</b>							
1. Tondo.....	143	151	294	8	5	13	307
2. San Nicolas.....	42	36	78	3	.....	8	81
3. Binondo.....	23	24	47	.....	.....	.....	47
<b>Total.....</b>	<b>208</b>	<b>211</b>	<b>419</b>	<b>11</b>	<b>5</b>	<b>16</b>	<b>435</b>
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	101	77	178	6	6	12	190
5. Quiapo.....	24	19	43	1	1	2	45
6. San Miguel.....	12	7	19	1	1	2	21
7. Sampaloc.....	96	87	183	9	9	18	201
<b>Total.....</b>	<b>233</b>	<b>190</b>	<b>423</b>	<b>17</b>	<b>17</b>	<b>34</b>	<b>457</b>
<b>No. III, PACO:</b>							
8. Port Area.....	2	.....	2	.....	.....	.....	2
9. Intramuros.....	24	37	61	4	2	6	67
10. Ermita.....	27	31	58	.....	1	1	59
11. Malate.....	68	61	129	4	4	8	137
12. Paco.....	35	19	54	1	5	6	60
13. Pandacan.....	13	7	20	.....	.....	.....	20
14. Santa Ana.....	12	11	23	.....	1	1	24
<b>Total.....</b>	<b>181</b>	<b>166</b>	<b>347</b>	<b>9</b>	<b>13</b>	<b>22</b>	<b>369</b>
<b>Grand total.....</b>	<b>622</b>	<b>567</b>	<b>1,189</b>	<b>37</b>	<b>35</b>	<b>72</b>	<b>1,261</b>

Attended by physicians, living, 424; stillbirths, 26.

Attended by midwives, living, 117; stillbirths, 1.

Attended by families, living, 720; stillbirths, 26.

**NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE  
CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	1	1	2	7.52
Filipinos.....	314	295	609	24.06
Spaniards.....	4	2	6	31.16
Other Europeans.....	1	1	2	10.46
Chinese.....	26	4	30	19.79
All others.....	5	5	10	26.95
<b>Total and average .....</b>	<b>351</b>	<b>302</b>	<b>653</b>	<b>23.71</b>

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEJIC:</b>			
1. Tondo.....	109	83	192
2. San Nicolas.....	28	22	50
3. Binondo.....	23	4	27
<b>Total.....</b>	<b>160</b>	<b>109</b>	<b>269</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	50	40	90
5. Quiapo.....	8	11	19
6. San Miguel.....	4	4	8
7. Sampaloc.....	59	48	107
<b>Total.....</b>	<b>121</b>	<b>103</b>	<b>224</b>
<b>No. III, PACO:</b>			
8. Port Area.....			
9. Intramuros.....	13	13	26
10. Ermita.....	9	11	20
11. Malate.....	22	36	58
12. Paco.....	13	16	29
13. Pandacan.....	6	3	9
14. Santa Ana.....	7	11	18
<b>Total.....</b>	<b>70</b>	<b>90</b>	<b>160</b>
<b>Grand total.....</b>	<b>351</b>	<b>302</b>	<b>653</b>

# NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA, TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	101	92
Divorced.....	1	.....
Widowed.....	24	54
Single.....	281	192
Conditions not stated.....	.....	2
<b>Total.....</b>	<b>407</b>	<b>340</b>
<b>Grand total.....</b>	<b>747</b>	

Stillbirths ..... 53

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	120	79	13	6	218
1 year plus.....	35	24	1	2	62
2 years plus.....	9	22	1	.....	32
3 years plus.....	9	4	1	.....	14
4 years plus.....	9	2	.....	.....	11
5 to 9 years.....	6	13	1	.....	20
10 to 14 years.....	5	8	6	2	16
15 to 19 years.....	18	17	7	.....	42
20 to 24 years.....	19	19	4	5	47
25 to 29 years.....	23	14	4	6	47
30 to 34 years.....	11	13	3	.....	27
35 to 39 years.....	13	10	2	4	29
40 to 44 years.....	9	8	1	2	20
45 to 49 years.....	10	12	2	3	27
50 to 54 years.....	9	5	1	3	18
55 to 59 years.....	9	7	4	2	22
60 to 64 years.....	10	10	1	1	22
65 to 69 years.....	7	8	.....	2	17
70 to 74 years.....	4	10	1	.....	15
75 to 79 years.....	5	7	1	.....	13
80 to 84 years.....	7	5	.....	.....	12
85 to 89 years.....	1	1	1	.....	3
90 to 94 years.....	2	3	.....	.....	5
95 to 99 years.....	1	5	.....	.....	6
100 years and over.....	.....	1	.....	.....	1
Age not stated.....	.....	.....	1	.....	1
<b>Total.....</b>	<b>351</b>	<b>302</b>	<b>56</b>	<b>88</b>	<b>747</b>

# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list number (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
	a. Typhoid fever.....			21	9					1		2		33
5	b. Paratyphoid fever.....			1										1
9	Malaria:			2	2									4
11	a. Malarial fever.....			1										1
	Whooping cough.....													
	Influenza.....													
	a. With pulmonary complications specified.....			3						1				3
	b. Without pulmonary complications specified.....			2										3
16	Dysentery:													
	a. Amebic.....			1										
	b. Bacillary.....			2	4									
	c. Unspecified or due to other causes.....			6	4					1				6
21	Erysipelas.....													1
25	Other epidemic and endemic diseases:			1										1
	c. Others under this title.....				2									2
29	Tetanus:													
	a. Umbilical.....				3									3
31	Tuberculosis of the respiratory system.....	1		48	49	1				3				102
32	Tuberculosis of the meninges and central nervous system.....			2	2					2				6
33	Tuberculosis of the intestines and peritoneum.....			2	2									4
38	Syphilis.....			1	1					1				3
43-69	<i>II. General diseases not included in Class I</i>													
43	Cancer and other malignant tumors of the buccal cavity.....													1
44	Cancer and other malignant tumors of the stomach, liver.....			2	2									4
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....				1									1
46	Cancer and other malignant tumors of the female genital organs.....													1
47	Cancer and other malignant tumors of the breast.....				1									1
49	Cancer and other malignant tumors of other or unspecified organs.....			3	2									5













NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

[Stillbirths not included]

International numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Euro- peans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
160-163	<i>XII. Early infancy</i>													
160	Congenital debility, icterus, and sclerema.....			1										1
164-	<i>XIII. Old age</i>													
164	Senility.....			1										1
165-203	<i>XIV. External causes</i>													
182	Accidental drowning.....									1				1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	f. Injuries by other vehicles.....			1										1
196	Other accidental electric shocks.....			1										1
	Total.....	1		53	37					2			1	94
	Grand total.....	1		90						2		1		94

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF AUGUST, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month												
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days		Total under 1 month		
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All causes.....	133	85	15	13	23	11	6	5	11	6	3	1	58	36
COMMUNICABLE DISEASES:														
Typhoid and paratyphoid fever (1)														
Smallpox (6)		1						1						1
Measles (7)														
Whooping-cough (9)														
Diphtheria (10)														
Influenza (11)	1													
Asiatic cholera (14)														
Dysentery (16)														
Meningococcus meningitis (24)														
Other epidemic and endemic diseases (25)														
Tetanus (29)		3				2		1						3
Other infectious diseases (1-42) <sup>1</sup>														
Beriberi (55)	5	1												
Diseases of the nervous system (70; 71; 80; 85)	22	20			5	1	2	1	2	2	1	1	10	5
Respiratory diseases (99; 100; 101; 107)	1	3												
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)	39	25					1		1	2			2	2
Congenital malformations (159)	10	6					1		1					
Early infancy (160; 161; 162; 163)	1													
All other causes (43-205) <sup>1</sup>	48	25	15	13	18	7	2	2	6	2	2	2	43	24
	6	1				1			1				1	1

<sup>1</sup> Other than those specified above.

NOTE.—Numbers in parentheses are the corresponding numbers in the International List of Causes of Death.

**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF AUGUST, 1928 (INCLUDING TRANSIENTS)**

Causes of death	Age at death under 1 year																						Total under 1 year	
	1 month +		2 months +		3 months +		4 months +		5 months +		6 months +		7 months +		8 months +		9 months +		10 months +		11 months +			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
All causes.....	14	7	12	5	5	5	3		6	6	5	4	4	4	5	5	7	3	6	3	8	7	75	49
COMMUNICABLE DISEASES:																								
Typhoid and paratyphoid fever (1)																								
Smallpox (6)																								
Measles (7)																								
Whooping-cough (9)																								
Diphtheria (10)																								
Influenza (11)																								
Asiatic cholera (14)																								
Dysentery (16)																								
Meningococcus meningitis (24)																								
Other epidemic and endemic diseases (25)																								
Tetanus (29)																								
Other infectious diseases (1-42)																								
Beriberi (55)	7	6	2	1	1	3	2				1	2			2	1	1		2	1		1	5	1
Diseases of the nervous system (70; 71; 80; 85)												2				1	1	1		1			12	15
Respiratory diseases (99; 100; 101; 107)																							1	3
Gastro intestinal diseases (108; 109; 113; 115; 116; 127)	2	1	9	3	1	2	1		4	4	2		3	1	2	3	5	2	3	2	5	5	37	23
Congenital malformation (159)																								
Early infancy (160; 161; 162; 163)																								
All other causes (43-205)¹	4	1			1	1			1	1	1												1	5

<sup>1</sup> Other than those specified above.

NOTE.—Numbers in parentheses are the corresponding numbers in the International List of Causes of Death.



## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	23,196
Number of rats caught by spring traps.....	2,269
Number of cage wire traps set.....	620
Number of rats caught by cage wire traps.....	2
Number and kind of baits (coconuts).....	24,372
Number of poison portions placed.....	24,353
Number of rats found poisoned.....	231
Number of rats killed by clubs and other weapons.....	990
Number of rats found dead from other causes.....	454
Total number of rats otherwise caught, found dead or killed.....	3,946
Total number of rats sent to the laboratory for examination.....	3,946
Total number of rats found positive for plague.....	0

---

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF AUGUST, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.	No. 1.	11	8	2	3	2	1	1	14	10	6	2	20	12
	No. 2.	9	5	1			1		5	5	2	1	11	6
	No. 3.	1	1	2					1	1	2		3	1
	No. 4.	12	3	6					12	3	6		18	3
	No. 5.	2		6					2		6		8	
II.	No. 6.	2		1		1			3		1		4	
	No. 7.	8	4	8					8	4	8	1	16	5
	No. 8.													
III.	No. 9.	4		3					4		3	2	7	2
	No. 10.	4		1		1			4		1	1	5	1
	No. 11.	10	2	8		1			10	2	8	1	18	3
	No. 12.			3							3	1	3	1
	No. 13.	1		1					1		1		2	
	No. 14.	1							1				1	
Grand total	65	23	45	8	4	2	2	1	69	25	47	9	116	34

**REMARKS:**

Cases confirmed as typhoid fever.....	113
Cases confirmed as paratyphoid fever.....	3
By autopsy.....	
By blood culture.....	0
By Widal reaction.....	10
By urine examination.....	49
By feces examination.....	0
By clinical symptoms.....	3
Cases reported among nonresident persons not included in the table.....	54
Deaths reported among nonresident persons not included in the table.....	34
Typhoid carrier—None.....	7

DYSENTERIES REPORTED DURING THE MONTH OF AUGUST, 1928, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.	No. 1.	2	1	3	3	3	1	1	5	4	4	1	9	5
	No. 2.						1				1		1	
	No. 3.				1	1			1	1			1	1
	No. 4.	5	2	1	1	1			6	3	1	1	7	4
II.	No. 5.													
	No. 6.													
	No. 7.	1		2		1			1		6	3	7	3
	No. 8.	1						4	1				1	
	No. 9.													
	No. 10.													
III.	No. 11.	1		1	2	1			3	1	1	1	4	2
	No. 12.			1	1	1			1	1			2	2
	No. 13.													
	No. 14.													
	Grand total.	10	3	8	8	7	6	3	18	10	14	8	32	18

REMARKS:

Amoebic dysentery

Bacillary dysentery

Unspecified

Cases reported among nonresident persons not included in the table.

Deaths reported among nonresident persons not included in the table.

Dysentery carrier—1.

2

16

14

5

3

## CHOLERA REPORTED DURING THE MONTH OF AUGUST, 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home				Total				Grand total	
	Male			Female			Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.	No. 1	.....		.....			.....		.....		.....		.....		.....	.....
	No. 2	.....		.....			.....		.....		.....		.....		.....	.....
	No. 3	.....		.....			.....		.....		.....		.....		.....	.....
	No. 4	.....		.....			.....		.....		.....		.....		.....	.....
II.	No. 5	.....		.....			.....		.....		.....		.....		.....	.....
	No. 6	.....		.....			.....		.....		.....		.....		.....	.....
	No. 7	.....		.....			.....		.....		.....		.....		.....	.....
	No. 8	.....		.....			.....		.....		.....		.....		.....	.....
	No. 9	.....		.....			.....		.....		.....		.....		.....	.....
	No. 10	.....		.....			.....		.....		.....		.....		.....	.....
III.	No. 11	.....		.....			.....		.....		.....		.....		.....	.....
	No. 12	.....		.....			.....		.....		.....		.....		.....	.....
	No. 13	.....		.....			.....		.....		.....		.....		.....	.....
	No. 14	.....		.....			.....		.....		.....		.....		.....	.....
Grand total	.....	.....		.....	.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

## REMARKS:

No nonresident case was reported during the month.

Cholera carrier—10.

## DIPHTHERIA REPORTED DURING THE MONTH OF AUGUST, 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	
	Deaths		Deaths		Deaths		Deaths		Deaths		Deaths		Deaths	
	Cases		Cases		Cases		Cases		Cases		Cases		Cases	Deaths
I... No. 1..... No. 2..... No. 3..... No. 4.....	1		1						1		1		2	
II... No. 5..... No. 6..... No. 7..... No. 8..... No. 9..... No. 10.....	2								2				2	
III... No. 11..... No. 12..... No. 13..... No. 14.....	1								1				1	
Grand total.....	4		1						4		1		5	

## REMARKS:

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—None.

4  
0

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF AUGUST, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria .....	35	9	2	2
Varicella .....	1	2		
Varioloid .....				
Smallpox .....				
Measles .....	5	1		
Whooping cough .....	1		1	
Influenza .....	18	6	6	
Bubonic plague .....				
Encephalitis lethargica .....				
Meningitis cerebrospinal epidemic .....				
Tuberculosis of the respiratory system .....	180	151	53	49
Tuberculosis of other organs .....	8	4	6	4
Beriberi, infantile .....	21	19	21	19
Beriberi, adults .....	3	1	3	1

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria .....	32	12	1	1
Varicella .....		1		
Varioloid .....				
Smallpox .....				
Measles .....		1		
Whooping cough .....	1			
Influenza .....	4	1	1	
Bubonic plague .....				
Encephalitis lethargica .....				
Meningitis cerebrospinal epidemic .....				
Tuberculosis of the respiratory system .....	27	26	6	4
Tuberculosis of other organs .....	2	2	2	1
Beriberi, infantile .....	1	1	1	1
Beriberi, adults .....				

**REPORT ON THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF AUGUST, 1928**

Sera and vaccines	On hand August 1, 1928	Received during the month	Total to be accounted for	Distrib- uted during the month	Remaining at the end of the month
Anti-diphtheric serum (tubes) .....	223		223		186
Anti-dysenteric serum (ampoules) .....	13	2,100	2,113	37	168
Anti-tetanic serum (units) .....	500,000		500,000	1,945	75,000
Cholera vaccine (c. c.) .....	10,300	90,000	100,300	425,000	2,700
Dried vaccine virus (units) .....	8,400	100,000	108,400	97,600	2,900
Dysenteric vaccine (c. c.) .....	26,670	180,000	206,670	105,500	3,770
Fresh vaccine virus (units) .....	5,800	200,000	205,800	202,900	34,500
Gonococcus vaccine (ampoules) .....				171,300	
Mixed typhoid cholera vaccine (c. c.) .....	47,440	240,000	287,440		57,400
Normal horse serum (ampoules) .....		66	66	230,040	
Typhoid vaccine (c. c.) .....	16,800	24,000	40,800	66	9,000

Health districts	Municipal districts	Vaccinations			Inspections of persons vaccinated						Total	
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over			
			Never	Successfully	Unsuccessful	Positive	Negative	Positive	Negative	Positive		Negative
No. 1	Tondo	522	472	11	39	520	29	24	1	1	545	30
	San Nicolas	1,196	55	1,137	4	61	4	1			62	4
	Binondo	73	62		11	48	9				48	10
	Santa Cruz	874	129	719	26	161	11	3		324	53	64
No. 2	Quiapo	60	52		8	59	3	4		1	64	3
	San Miguel	17	16		1	12					12	
	Sampaloc	341	290		51	256	17	25		5	286	17
	Port Area					2						
No. 3	Intramuros	234	53	101	40	48	11		1		48	12
	Ermita	39	31		8	50	3	1			51	3
	Malate	13	75		13	114	6	1	1		115	7
	Paco	137	95		42	93	15	3	3	2	98	21
	Pandacan	27	24		3	14	2				14	2
	Santa Ana	79	52	10	17	55	4	2	1	2	57	7
	Total	3,687	1,446	1,978	263	1,493	114	64	7	333	59	1,890

## Vaccine virus:

Remaining from last month.....

Received during the month.....

Used during the month.....

Remaining for next month.....

## Balance .....

7,825 units

0

4,800 units

3,025

7,825 units

7,825 units

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA  
DURING THE MONTH OF AUGUST, 1928<sup>1</sup>**

Health districts	Municipal districts	First injections		Second injections		Total	
		V.	R.	V.	R.	V.	R.
No. 1.....	Tondo.....	1,222		1,242		2,464	
	San Nicolas.....	561	193	986	91	1,547	284
	Binondo.....	43	122	557	2,218	600	2,340
No. 2.....	Santa Cruz.....	583		406		989	
	Quiapo.....	2				2	
	San Miguel.....		385				385
	Sampaloc.....	3,757		2,595		6,352	
No. 3.....	Port Area.....						
	Intramuros.....			38		38	
	Ermita.....	5		6		11	
	Malate.....	14		10		24	
	Paco.....	42	301	3	43	45	344
	Pandacan.....						
	Santa Ana.....						
Total.....		6,229	1,001	5,843	2,352	12,072	3,353

V., in persons never vaccinated before; R., revaccinations.

**ANTITYPHOID AND ANTICHOLERA VACCINATIONS PERFORMED IN THE CITY  
OF MANILA DURING THE MONTH OF AUGUST, 1928<sup>1</sup>**

Health districts	Municipal districts	First injections		Second injections		Third injections		Total	
		V.	R.	V.	R.	V.	R.	V.	R.
No. 1.....	Tondo.....	448	6,284	277	4,452	173	3,550	898	14,326
	San Nicolas.....	22	1,426	20	920	11	574	53	2,920
	Binondo.....	40	3,202	19	1,882	33	718	92	5,802
No. 2.....	Santa Cruz.....	36	2,866	42	1,663	29	767	107	5,296
	Quiapo.....	51	839	19	593	3	436	73	1,868
	San Miguel.....	94	8,748	71	7,763	61	2,145	226	18,656
	Sampaloc.....	210	5,575	168	4,941	122	3,426	500	13,942
No. 3.....	Port Area.....	19	1,493	8	1,744	6	1,212	33	4,449
	Intramuros.....		3,487		3,761		1,380		8,628
	Ermita.....		852		826		823		2,501
	Malate.....		2,952		717		375		4,044
	Paco.....								
	Pandacan.....								
	Santa Ana.....								
Total....		920	37,724	624	29,302	438	15,406	1,982	82,432

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.  
Typhoid and paratyphoid vaccine used for the third injections.

V., in persons never vaccinated before; R., revaccinations.



**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED FROM  
THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Vaccinations			
	Total vac- cinations	Previously vaccinated		
		Never	Success- fully	Unsuc- cessfully
Abra.....	9,029	1,447	2,499	5,083
Agusan.....	4,917	1,430	1,256	2,231
Albay.....	35,293	7,953	10,756	16,584
Antique.....	14,617	4,381	6,508	3,728
Bataan.....	8,854	3,598	1,445	3,811
Batanes.....	932	115	441	376
Batangas.....	41,157	11,733	11,250	18,174
Bohol.....	37,186	11,509	10,735	14,942
Bukidnon.....	5,525	2,157	842	2,526
Bulacan.....	28,345	9,199	10,402	8,744
Cagayan.....	69,239	12,547	47,910	8,782
Camarines Norte.....	6,531	2,059	1,769	2,703
Camarines Sur.....	14,452	3,673	3,180	7,599
Capiz.....	30,049	8,130	11,500	10,419
Catanduanes.....	26,534	3,035	10,430	13,069
Cavite.....	107,233	7,112	90,821	9,300
Cebu.....	85,331	23,589	15,028	46,714
Cotabato.....	17,106	5,537	4,954	6,615
Davao.....	23,734	8,778	8,419	6,537
Ilocos Norte.....	93,815	5,322	72,211	16,282
Ilocos Sur.....	19,705	5,278	3,786	10,641
Iloilo.....	99,889	31,650	50,300	17,939
Isabela.....	13,759	3,337	2,487	7,935
Laguna.....	87,401	8,733	67,223	11,445
Lanao.....	13,718	4,724	5,851	3,143
La Union.....	19,382	4,125	399	14,858
Leyte.....	92,001	27,763	36,752	27,486
Marinduque.....	7,455	1,583	3,760	2,112
Masbate.....	45,991	5,749	29,969	10,273
Mindoro.....	5,809	1,381	1,212	3,216
Misamis.....	22,961	7,989	1,896	13,076
Mountain Province.....	27,357	7,841	8,896	10,620
Nueva Ecija.....	31,303	10,812	4,312	16,179
Nueva Vizcaya.....	4,205	1,052	576	2,577
Occidental Negros.....	76,603	24,747	32,993	18,863
Oriental Negros.....	36,506	12,593	9,043	14,870
Palawan.....	3,079	731	1,036	1,312
Pampanga.....	20,620	8,102	1,463	11,055
Pangasinan.....	65,744	18,801	14,572	32,371
Rizal.....	21,735	6,588	9,836	5,311
Romblon.....	6,598	1,732	1,889	2,977
Samar.....	43,310	9,853	11,688	21,769
Sorsogon.....	38,499	7,516	14,357	16,626
Sulu.....	20,688	8,480	5,714	6,494
Surigao.....	5,944	1,855	988	3,101
Tarlac.....	19,716	4,741	11,133	3,842
Tayabas.....	27,781	10,563	4,433	12,785
Zambales.....	6,844	2,052	899	3,893
Zamboanga.....	14,178	5,685	1,622	6,871
<b>Total.....</b>	<b>1,558,660</b>	<b>379,360</b>	<b>661,441</b>	<b>517,859</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORTS OF ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>—Continued**

Provinces	Inspections of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	795	369	1,584	1,118	1,471	2,626	3,850	4,113
Agusan.....	236	172	368	540	743	639	1,347	1,351
Albay.....	4,111	1,667	4,122	1,428	5,325	4,408	13,558	7,503
Antique.....	1,385	438	1,794	863	1,558	2,002	4,737	3,303
Bataan.....	2,140	363	2,383	880	1,135	581	5,658	1,824
Batanes.....	74	37	153	99	270	222	497	358
Batangas.....	5,772	1,453	8,104	3,555	7,432	7,136	21,308	12,144
Bohol.....	3,622	1,610	5,693	3,177	8,686	7,957	18,001	12,744
Bukidnon.....	172	110	450	444	1,100	1,384	1,722	1,938
Bulacan.....	5,705	1,495	5,344	2,529	4,850	4,198	15,899	8,222
Cagayan.....	3,693	963	6,002	2,276	16,510	21,119	26,205	24,358
Camarines Norte.....	1,104	305	1,999	557	1,062	511	4,165	1,373
Camarines Sur.....	1,912	879	2,773	1,117	3,823	2,202	8,508	4,198
Capiz.....	2,690	674	3,638	1,553	9,285	4,543	15,613	6,770
Catanduanes.....	2,048	1,010	2,910	1,301	5,402	4,776	10,360	7,087
Cavite.....	4,263	2,110	6,809	5,103	28,218	33,917	39,290	41,130
Cebu.....	8,077	3,775	9,255	4,825	9,605	13,089	26,937	21,689
Cotabato.....	681	331	1,371	802	3,821	2,337	5,873	3,470
Davao.....	908	363	2,064	1,123	5,872	4,917	8,844	6,403
Ilocos Norte.....	3,512	1,463	10,145	5,134	31,521	33,928	45,178	40,525
Ilocos Sur.....	2,331	1,140	3,739	1,912	3,650	3,421	9,720	6,473
Iloilo.....	6,809	1,998	12,909	4,993	21,138	26,977	40,856	33,966
Isabela.....	1,842	594	2,387	810	3,166	1,746	7,395	3,150
Laguna.....	2,627	2,707	4,177	4,149	13,831	26,300	20,635	33,156
Lanao.....	679	368	1,009	846	1,932	2,583	3,620	3,797
La Union.....	2,444	1,111	3,447	3,072	2,407	3,901	8,298	8,084
Leyte.....	3,334	819	13,036	2,861	24,580	17,510	40,950	21,190
Marinduque.....	751	260	396	183	1,027	2,285	2,174	2,728
Masbate.....	1,369	250	4,276	1,041	15,358	7,694	21,003	8,985
Mindoro.....	495	171	712	396	1,124	1,099	2,331	1,666
Misamis.....	1,643	677	2,673	1,192	3,843	2,503	8,159	4,372
Mountain Province.....	446	181	1,571	956	5,219	3,975	7,236	5,112
Nueva Ecija.....	4,350	2,009	6,868	3,251	4,874	5,514	16,092	10,774
Nueva Vizcaya.....	568	301	369	433	793	1,400	1,730	2,134
Occidental Negros.....	5,287	1,313	9,635	3,119	14,948	14,328	29,870	18,760
Oriental Negros.....	5,553	1,621	6,352	2,728	7,805	5,041	19,710	9,390
Palawan.....	39	45	160	105	902	858	1,101	1,008
Pampanga.....	2,382	1,488	2,010	1,162	693	914	5,085	3,564
Pangasinan.....	9,748	2,937	11,511	4,062	12,722	12,833	33,981	19,832
Rizal.....	3,181	1,637	1,258	1,378	2,483	4,591	6,922	7,606
Romblon.....	926	325	1,288	398	1,655	911	3,869	1,634
Samar.....	1,890	947	3,701	2,470	7,626	5,886	13,217	9,303
Sorsogon.....	1,781	764	3,922	1,463	10,875	6,950	16,578	9,177
Sulu.....	935	443	3,039	1,638	3,005	3,975	6,979	6,656
Surigao.....	509	176	750	368	1,619	1,267	2,878	1,811
Tarlac.....	1,443	894	2,747	2,110	2,651	4,701	6,841	7,705
Tayabas.....	4,296	2,289	5,698	2,625	6,135	5,485	16,129	10,399
Zambales.....	622	524	755	1,117	894	1,523	2,271	3,164
Zamboanga.....	764	548	1,889	1,423	2,405	2,602	5,058	4,573
<b>Total.....</b>	<b>121,944</b>	<b>48,124</b>	<b>189,245</b>	<b>90,685</b>	<b>327,049</b>	<b>331,265</b>	<b>638,238</b>	<b>470,074</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY 1928<sup>1</sup>**

Provinces	First injections	Second injections	Total
Abra.....	6,036	5,113	11,149
Agusan.....	1,973	678	2,651
Albay.....	608	315	923
Bataan.....	29		29
Bukidnon.....	1,437	535	1,972
Bulacan.....	417	236	653
Cagayan.....	1,453	1,012	2,465
Camarines Norte.....	312	288	600
Camarines Sur.....	5,565	1,967	7,532
Capiz.....	20,812	14,166	34,978
Cebu.....	689	131	820
Iloilo.....	16,778	8,035	24,813
Isabela.....	1,995	1,370	3,365
Laguna.....	6,596	4,500	11,096
La Union.....	17,682	12,769	30,451
Masbate.....	635	212	847
Mindoro.....	367	106	473
Misamis.....	771	225	996
Mountain Province.....	1,607	369	1,976
Nueva Vizcaya.....	42	15	57
Oriental Negros.....	133	96	229
Palawan.....	91	81	172
Pampanga.....	3,414	1,089	4,503
Pangasinan.....	13,123	9,367	22,490
Rizal.....	5,517	1,809	7,326
Romblon.....	3,984	3,642	7,626
Samar.....	21	7	28
Surigao.....	70	54	124
Tarlac.....	4,763	1,148	5,911
Tayabas.....	3,651	1,853	5,504
Total.....	120,571	71,188	191,759

<sup>1</sup>Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Agusan.....	354	118		472
Albay.....	10,117	2,885	232	13,234
Antique.....	2,057	1,217		3,274
Bataan.....	4,724	317		5,041
Batangas.....	1,505	542		2,047
Bulacan.....	45,528	791		46,319
Camarines Sur.....	16,408	524		16,932
Capiz.....	298	226		524
Catanduanes.....	338	33		371
Cebu.....	394	338	50	782
Iloilo.....	222	85		307
Laguna.....	1,054	362	5	1,421
Leyte.....	958	192		1,150
Mindoro.....	375			375
Nueva Ecija.....	285			284
Pampanga.....	761	99		761
Pangasinan.....	4,486	3,421		7,907
Rizal.....	140,244	15,539	3	155,786
Romblon.....	1,089	209		1,298
Samar.....	1,498	339	48	1,885
Sorsogon.....	4,203	490		4,693
Tarlac.....	1,998	736		2,734
Total.....	238,896	28,463	338	267,697

<sup>1</sup>Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORTS OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928 <sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	345	233	107	685
Bataan.....	51	51	51	153
Batangas.....	57	41	.....	98
Bukidnon.....	157	82	31	270
Bulacan.....	2,462	2,114	758	5,334
Camarines Sur.....	2,944	278	12	3,234
Iloilo.....	.....	120	.....	120
Laguna.....	5,038	3,453	1,317	9,808
Mindoro.....	340	30	.....	370
Pampanga.....	6	6	.....	12
Pangasinan.....	1,653	1,082	53	2,788
Rizal.....	2,538	953	205	3,696
Romblon.....	300	300	.....	600
Sorsogon.....	224	2	.....	226
Tarlac.....	1,482	424	3	1,909
Total.....	17,597	9,169	2,537	29,303

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA)  
VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928 <sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	2,431	1,851	.....	4,282
Agusan.....	3,156	1,595	.....	4,751
Antique.....	2,606	1,391	.....	3,997
Bataan.....	14,460	9,902	.....	24,362
Batanes.....	627	585	.....	1,212
Batangas.....	2,537	1,785	.....	4,322
Bohol.....	2,233	1,455	.....	3,688
Bukidnon.....	530	580	49	1,159
Bulacan.....	45	27	.....	72
Cagayan.....	5,715	3,022	.....	8,737
Camarines Norte.....	7,221	5,890	.....	13,111
Camarines Sur.....	2,545	549	.....	3,094
Capiz.....	996	472	.....	1,468
Cavite.....	62,277	56,695	.....	118,972
Cebu.....	22,109	5,017	477	27,603
Cotabato.....	192	.....	.....	192
Davao.....	1,862	916	.....	2,778
Ilocos Norte.....	5,707	2,339	539	8,585
Ilocos Sur.....	3,869	2,901	46	6,816
Iloilo.....	21,273	4,755	.....	26,028
Isabela.....	594	286	.....	880
Laguna.....	2,008	1,559	743	4,310
Lanao.....	9,793	4,250	.....	14,043
La Union.....	9,120	6,255	.....	15,375
Leyte.....	2,644	1,132	.....	3,776
Marinduque.....	5,224	2,912	.....	8,136
Masbate.....	1,387	261	.....	1,648
Mindoro.....	947	487	.....	1,434
Misamis.....	5,689	1,597	46	7,332
Mountain Province.....	1,684	117	.....	1,801
Nueva Ecija.....	3,278	2,554	.....	5,832
Nueva Vizcaya.....	1,090	980	.....	2,070
Occidental Negros.....	9,607	4,554	.....	14,161
Oriental Negros.....	5,280	2,782	.....	8,062
Palawan.....	59	59	.....	118
Pampanga.....	258,544	6,335	.....	264,879
Pangasinan.....	11,244	7,473	.....	18,717
Rizal.....	2,949	1,672	.....	4,621
Samar.....	3,259	1,323	198	4,780
Sulu.....	30	.....	.....	30
Tarlac.....	2,525	1,470	.....	3,995
Tayabas.....	14,749	7,800	.....	22,549
Zambales.....	7,714	5,017	.....	12,731
Zambonga.....	7,989	1,992	.....	9,981
Total.....	529,798	164,594	2,098	696,490

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF  
AUGUST, 1928**

(No case and no death reported during the month)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF AUGUST, 1928**

Province and town	Cases	Deaths
<b>BULACAN:</b>		
Paombong.....	1	0
<b>Total</b> .....	1	0

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF AUGUST, 1928**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, August 1, 1928:</b>				
Minor .....	130	103	258	491
Sewer .....	25	52	3	80
Vacating .....	8	9		17
Filling .....	26	43	23	92
<b>Total .....</b>	<b>189</b>	<b>207</b>	<b>284</b>	<b>680</b>
<b>Orders issued during the month:</b>				
Minor .....	15	7	12	34
Sewer .....				
Vacating .....		1	1	2
Filling .....				
<b>Total .....</b>	<b>15</b>	<b>8</b>	<b>13</b>	<b>36</b>
<b>Orders completed during the month:</b>				
Minor .....	11	5	11	27
Sewer .....				
Vacating .....				
Filling .....				
<b>Total .....</b>	<b>11</b>	<b>5</b>	<b>11</b>	<b>27</b>
<b>Orders cancelled during the month:</b>				
Minor .....	1	2	1	4
Sewer .....				
Vacating .....				
Filling .....				
<b>Total .....</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>
<b>Orders pending, August 31, 1928:</b>				
Minor .....	133	103	258	494
Sewer .....	25	52	3	80
Vacating .....	8	9		17
Filling .....	26	44	24	94
<b>Total .....</b>	<b>192</b>	<b>208</b>	<b>285</b>	<b>685</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations .....	29	50	48	127
<b>Permits for minor building constructions:</b>				
Approved .....	33	63	32	128
Disapproved .....	12	6	4	22
<b>New buildings completed .....</b>	<b>10</b>	<b>30</b>	<b>24</b>	<b>64</b>
<b>Permits for light and mixed material constructions:</b>				
Approved .....	31	58	14	103
Disapproved .....	24	9	4	37
<b>Prosecutions:</b>				
Convictions .....				
Dismissals .....	3		1	4
Amount of fines .....				
<b>Plumbing permits issued .....</b>	<b>76</b>	<b>75</b>	<b>69</b>	<b>220</b>
<b>Plumbing projects completed .....</b>	<b>53</b>	<b>65</b>	<b>70</b>	<b>188</b>
<b>Premises connected to the sanitary sewer to July 31, 1928 .....</b>	<b>2,566</b>	<b>4,399</b>	<b>791</b>	<b>7,756</b>
Connected during the month .....	2	11	9	22
<b>Total .....</b>	<b>2,568</b>	<b>4,410</b>	<b>800</b>	<b>7,778</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

SEPTEMBER, 1928

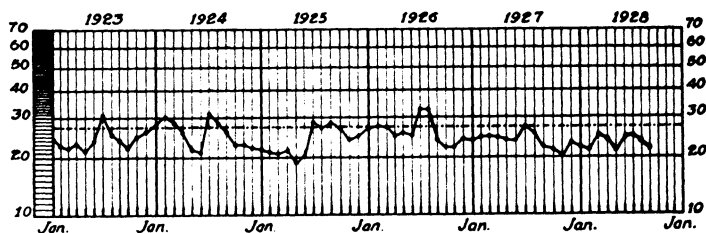
No. 9

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY of MANILA*



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1928

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
<i>Re: Accident of Dr. Pedro J. Alvarado, District Health Officer for the Province of Batanes, By Dr. GABRIEL INTENGAN, Chief, Division of Provincial Sanitation.....</i>	449
<i>Mosquito Survey and Public Health Laboratory Facilities in Cavite, By C. MANALANG, Chief, Division on Malaria Control.....</i>	451
<i>The Intravenous use of Mercurochrome at the Tayabas Provincial Hospital, By J. SANTOS CUYUGAN, A.B.; B.S.; M.D.....</i>	453
<i>Germ Enemies of the Body, By MIRIAM E. GRIFFIN, M.D.....</i>	461
<i>Keeping the Body Healthy, By Dr. M. E. GRIFFIN.....</i>	465
<i>The Gaps that should be filled in.....</i>	470
<i>Sanitation among Plantation Laborers, By JOSE P. BANTUG, M.D....</i>	473
<i>The Work with Unexpressed Rewards, By TEOFILO CORPUS.....</i>	476
<i>Miscellaneous .....</i>	478
<i>General Statistics .....</i>	481



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**SEPTEMBER, 1928**

**No. 9**

**Memorandum for: THE DIRECTOR OF HEALTH**

**Re: ACCIDENT OF DR. PEDRO J. ALVARADO, DISTRICT HEALTH OFFICER FOR THE PROVINCE OF BATANES.**

1. In compliance with your verbal instruction, I met Surgeon Pedro J. Alvarado, who arrived in the City at 8 o'clock p. m. September 11, 1928, on the steamer *Everett*, under the care of Dr. Aurelio Dayrit, physician in charge to accompany the former from Batanes to Manila. Immediately upon arrival of the boat, Dr. Alvarado was rushed, by an ambulance from San Lazaro Hospital, to the Philippine General Hospital, where arrangement was made for his accommodation on the very same day. There being no private room available then, Doctor Alvarado was placed temporarily in a 15-peso-a-day room situated at the corner of Floor 3, which was the only one vacant at that time. Instruction has been given to the Philippine General Hospital to transfer Doctor Alvarado to the private room as soon as a vacancy occurs.

2. According to Doctor Alvarado's statements, the sad accident that he has met happened as follows:

An epidemic of influenza and whooping cough broke out in the Province of Batanes, especially in the towns of Basco and Ibanag. In order to control this epidemic, Doctor Alvarado tried to make frequent field inspections and to visit living cases for the purpose of giving them proper care and treatment. In the afternoon of August 20, last, after visiting a patient who was suffering from influenza and while untying his horse, the animal got frightened and furiously ran away, with its rope unfortunately entangling around Doctor Alvarado's leg and drag-

ging him along, which caused the complete fracture of his left femur and dislocation of his left knee. The rope, which was just loosely twisted, was later unreveled from Doctor Alvarado behind.

The foregoing statements may be corroborated by Surgeon Jose S. Martinez, the new district health officer for Batanes, who has been directed to make a thoro investigation of this matter and submit a report of his findings to the Central Office in order to corroborate the telegraphic report of the Provincial Governor stating that the accident happened while Doctor Alvarado was performing an official inspection.

3. Doctor Alvarado is at present under the medical care and treatment of Doctor Estrada, following Doctor Aguilar's suggestion to make him Doctor Alvarado's physician until cured.

4. Respectfully submitted.

GABRIEL INTENGAN

*Chief, Division of Provincial Sanitation*

September 4, 1928

To: His Excellency, the GOVERNOR-GENERAL

Subject: MOSQUITO SURVEY AND PUBLIC HEALTH LABORATORY FACULTIES IN CAVITE

### I. MOSQUITO SURVEY OF CAVITE

1. As member of the Health Investigation Committee appointed by His Excellency the Governor-General, the undersigned with the assistance of two Entomologists of the Division on Malaria Control and two local sanitary inspectors made a one day mosquito survey of Poblacion of Cavite on August 30, 1928.

2. Because of the limited time the data gathered do not cover in detail all the premises and all possible mosquito breeding places in Cavite. They are rather type "samplings" from the different districts.

3. In all, over 200 different types of possible mosquito breeding places were examined, the findings of which may be seen in the following table:

Place	No. of exam.	Nature of breeding	No. — No. +		Larvae found
Caridad.....	20	Wells.....	16	4	Culex in shallow wells only.
	12	Low areas.....	6	6	Culex and Few <i>A. rossii</i> canal.
Cavite.....	21	Water jars and barrels.....	0	21	Culex and stegomyia.
	41	Wells.....	38	3	Culex and stegomyia.
San Antonio.....	27	Artificial containers.....	20	7	Culex and stegomyia.
	9	Deep wells.....	9	0	
San Roque.....	1	Low place (Cañacao).....	0	1	Culex and <i>A. rossii</i> .
	31	Artificial containers and jars.....	2	29	Culex and stegomyia.
San Roque.....	8	Wells (deep and shallow).....	2	6	Culex in shallow wells.
	41	Artificial containers jars, etc.....	2	39	Culex and stegomyia.

4. From the above table it is evident that the most important breeding places for the domestic mosquitoes are artificial containers found in the kitchens and backyards which breed them heavily. In the low places they seem to breed lightly. Abandoned deep wells are free as a rule, except a few. The well in the Provincial Building was found to be the worst infected of all. Shallow wells breed more. Street drains did not show breeding. No attempts were made to examine the cesspools and roofs due to lack of time. Breeding of malaria transmitting species is absent altogether.

5. The present practice of filling and oiling of the low places so common in Cavite should be continued. Wells found infected should be filled or hermetically sealed. If the eight or more sanitary inspectors in Cavite would make it a part of their routine work when out on inspecting premises to look for the

artificial containers and upset them as they are found infested and at the same time call the attention of the occupants, some reduction in mosquito intensity can be accomplished. The present coöperation of the boy scouts should continue. Practical demonstrations of mosquito breeding and how to prevent it in all class rooms should be conducted by the teachers. The pupils should bring in the material themselves.

## II. PUBLIC HEALTH LABORATORY FACILITIES, CAVITE

1. In the municipal building is a small clinical laboratory in charge of a health service technician who can examine for intestinal parasite ova, urine for albumen, sugar and cast, tuberculosis in sputum, bacillus leprae in scrapings, gonococcus, malaria and may be Widal for typhoid if he is kept supplied with good stains and fresh culture.

2. The technician claims that he could not do any more than these examinations due to lack of equipment and supplies. Even with these on hand, however, it is believed that he should not be allowed to work alone. Supervision by a competent full time laboratory man with medical training is necessary. The technician may be capable of doing the mechanical part and even interpretations of some of his findings when reagents are standardized, but he will not be in a position to detect and know when they go wrong, which often happens with differential stains, culture media, agglutinating sera, Wassermann and Kahn reagents.

3. The laboratory of the Cañacao Naval Hospital on the other hand is spacious, very well equipped and personneled and probably in a position to do many special examinations of particular importance to public health, such as biological examination of water and milk, carrier surveys for diphtheria, cholera, typhoid and dysentery, Kahn test for syphilis, etc., etc.

4. It is believed that these two agencies working coöperatively can very well handle most if not all public health laboratory examinations for the Town of Cavite.

5. Since there is no health service officer who can supervise the health service technician it suggested that some sort of supervision on the part of the chief of laboratory at Cañacao Hospital, be exercised upon him. If this is not practicable an arrangement may be made whereby he may work in the Cañacao laboratory, supplies and equipment to be furnished by the health service.

C. MANALANG

*Chief, Division on Malaria Control*

## THE INTRAVENOUS USE OF MERCUROCHROME AT THE TAYABAS PROVINCIAL HOSPITAL

By J. SANTOS CUYUGAN, A.B.; B.S.; M.D.

The patients treated with mercurochrome intravenously at the Tayabas Provincial Hospital from November 5, 1926 to November 5, 1927 make a number of 60. Of these the majority were cases of acute rheumatic polyarthrititis. The next ranking in number were cases of Gonorrheal polyarthrititis. Several cases of septicemia, pyemia, gangrene, pyelonephritis, pyelocystitis with pelvic cellulitis, pulmonary abscess, endocarditis with septicemia were also treated. The result on the whole has been very gratifying and encouraging. In only three cases did the drug frankly fail. *One of these* was a case of pneumonia, lobar apical, right. The patient, adult, male, 28 years old, was admitted July 29, 1927, cyanotic, moribund with panting respiration, consolidation of the right apex and full of rales. Two doses of intravenous mercurochrome of 12 cc. each on two consecutive days were given. Patient died on August 1, 1927.

The other was a case of multiple osteomyelitis on a boy, 14 years old. The osteomyelitis involving the right tibia, femur, right clavicle, manifested itself abruptly while patient was convalescing from a severe type of lobar pneumonia. Repeated doses of mercurochrome were given intravenously without apparent effect. Antistreptococcic serum (polyvalent) was also given. Patient died after a long tedious struggle, temperature remaining high till death.

The third was a case of typhoid fever, complicated with pyelocystitis, malaria (splenomegaly) and septicemia: Female, 45 years, was admitted April 26, 1927 in a very weak condition, given 10 cc. of mercurochrome April 28; 15 cc. of mercurochrome on April 29. Patient died on April 30, 1927.

The following are few of the outstanding cases whose brilliant recoveries were brought about by the intravenous use of mercurochrome:

(1) P. L., male, 40, was admitted on April 3, 1927, complaining of acute pains in both knees and ankles. Unable to walk.

*Diagnosis.*—Polyarthrititis, rheumatic recurrent.

*Treatment.*—April 4—8 cc. of 1 per cent mercurochrome; April 5, 10 cc. of 1 per cent mercurochrome.

Discharged on April 8, 1927. Recovered.

(2). M. R., male, 35 years old, admitted on February 11, 1927, complaining of pain in the ankles, inability to walk.

*Diagnosis.*—Polyarthrititis, rheumatic, acute.

*Treatment.*—February 11—given 5 cc. of 1 per cent mercurochrome; February 12, 10 cc. of 1 per cent mercurochrome.

Discharged on February 15, 1927. Recovered.

(3). F. I., male, 35 years old; admitted August 21, 1927, complaining of severe pains in all joints: knees, ankles, elbows, shoulders, fingers. Unable to sit up on bed; scarcely could turn to his side.

*Diagnosis.*—Polyarthrititis, rheumatic, acute, severe.

*Treatment.*—August 21—10 cc. of 1 per cent mercurochrome; August 22, 12 cc. of 1 per cent mercurochrome; August 24, 10 cc. of 1 per cent mercurochrome; August 26, 15 cc. of 1 per cent mercurochrome.

*Result.*—Patient was able to walk after the second injection. But it was found necessary to give two more injections after the second dose to insure complete recovery.

Discharged on August 28, 1927. Completely recovered.

(4) L. S., male, 36 years old; admitted April 13, 1927, complaining of severe pains in both ankles, right knee, jaw, clavicle (right); active urethral discharge-going on for one month. He was not able to *open his mouth* on the first day of admission, owing to *stiff* and painful mandibular joint.

*Diagnosis.*—Polyarthrititis, acute, gonorrheal.

*Treatment.*—April 14, 10 cc. of 1 per cent mercurochrome; April 15, 12 cc. of 1 per cent mercurochrome; April 18, 15 cc. of 1 per cent mercurochrome.

*Result.*—After the second injection patient was able to open his mouth without any aid, and was able to eat regular solid diet. After the third injection he was able to walk about without any discomfort. It was necessary to keep him several days after the disappearance of his articular trouble as he was also getting urethral instillation with protargol.

Discharged on April 24, 1927. Recovered of his arthritis and free of urethral discharge.

(5) F. V., female, age 17, wife to above (4) was admitted April 11, 1927, complaining of severe pains in the right ankle; inability to walk. Vaginal discharge positive for gonococcus. Treated first in the Pay Ward with milk injections. No improvement. Transferred to Free Ward, April 17, 1927.

*Diagnosis.*—Arthritis gonorrheal; indocericitis, gonorrheal.

*Treatment.*—April 17, 10 cc. of 1 per cent mercurochrome; April 18, 10 cc. 1 per cent mercurochrome; April 23, 15 cc. of 1 per cent mercurochrome.

Discharged on April 24, 1927. Recovered; walking-painless.

(6). V. F., male, 20 years old; admitted April 20, 1927, complaining of urethral discharge, swollen and tender testis (right) *painful right ankle and knee.*

*Diagnosis.*—Urethritis and epididymo-orchitis, ganorrheal; arthritis, gonorrheal.

*Treatment.*—April 20, 10 cc. of 1 per cent mercurochrome; April 21, 12 cc. of 1 per cent mercurochrome.

*Result.*—After the second injection, symptoms of arthritis disappeared. Swollen testis began to get smaller and with the aid of hot sits bath t.i.d. recovery was comparatively rapid.

Discharged on May 3, 1927. Recovered.

(7) C. S., female, 30 years old; admitted on May 12, 1927, complaining of a painful, tender mass in the right side of the abdomen. Palpation disclosed a tender mall, about the size of a duck's egg in the region of the right kidney. Urinalysis showed:

Albumin—two plus (++).

Pus—three plus (+++).

Casts—granular one plus (+).

*Diagnosis.*—Pyelonephritis.

*Treatment.*—May 15, 15 cc. of 1 per cent mercurochrome; Potassium acetate mixture by mouth tid. Force fluids.

*Result.*—Two days after the mercurochrome injection the pain was gone. The tumor mass kept on getting smaller and less tender every day until it was no longer palpable. Subsequent urinalysis showed normal urine.

Discharged on May 23, 1927. Recovered.

(8) R. B., girl, 10 years old; admitted May 30, 1927, complaining of painful and frequent urination, abdominal pain and fever. Suprapubic region found resistant and doughy in consistency, rather tender. Rectal examination disclosed *tenderness* of the pelvic walls which feet thickened and doughy.

Urinalysis showed thick pus cells; no casts, albumin +.

*Diagnosis.*—Pyelocystitis; pelvic cellulitis, secondary.

*Treatment.*—May 27, 1927, 5 cc. of 1 per cent mercurochrome; Bladder lavage with boric acid daily.

*Result.*—One day after the injection of mercurochrome the temperature felt from 39 degree centigrade to normal.

Recovery was rapid and complete.

Discharged on June 3, 1927. Recovered.

(9) G. A., male, Japanese, 30 years old; admitted July 27, 1927, complaining of painful swollen back; painful toe (large) fever, weakness, diarrhea and cough. Condition of patient on admission: Very weak, lying helpless in bed, feverish. On examination a large extensive abscess of the back (right side) was discovered. Another abscess, just forming in the right big toe. Lungs friction rub. Temperature 39 degree C.; pulse rate 100 per minute and respiration 30 per minute.

*Diagnosis.*—Abscesses, multiple (pyemia); Pleurisy, dry.

*Treatment.*—July 27, abscesses opened and drained; July 28, 10 cc. of 1 per cent mercurochrome; July 29, 12 cc. of 1 per cent mercurochrome.

*Result.*—After the second injection, the temperature which stayed around 39 degree C. since admission, fell to normal and remained normal throughout the course of treatment which was rather long (three weeks).

Discharged on Aug. 17, 1927. Recovered.

(10) T. V., male, 35 years old; admitted September 7, 1927, presenting multiple abscesses; arm, back, thigh and hip. Condition feverish; but ambulatory.

Temperature 40 degree C.

*Diagnosis.*—Pymia (multiple abscesses).

*Treatment.*—September 7, abscesses of arm incised and drained; September 9, 15 cc. of 1 per cent mercurochrome; September 12, 15 cc. of 1 per cent mercurochrome; September 18, 20 cc. of 1 per cent mercurochrome.

*Result.*—Up to the third injection on the temperature was of remittent type, ranging from 38 degree C. to 40 degree C. After the third injection (20 cc.) the temperature fell from 39.5 degree C. to normal and kept on normal until patient was discharged. Of the many abscesses mentioned above it was necessary open and drain only two, that of the arm, and thigh. All the rest subsided and disappeared gradually after the second injection.

Discharged on September 24, 1924. Recovered.

(11) P. P., high-school pupil, male, 17 years old; admitted August 16, 1927, complaining of chest pain, cough, foul expectoration, fever, chilliness. Had pneumonia two weeks previously.

Examination of the chest disclosed a circumscribed area of dullness about the region of the right middle lobe, with some distant crepitant rales. The expectoration which was very foul and purulent was self suggestive. This was examined in the laboratory and mixed infection of Streptococci were missing. The temperature was intermittent.

*Diagnosis.*—Abscess, pulmonary (post pneumonia).

*Treatment.*—August 20, 8 cc. of 1 per cent mercurochrome; August 22, 10 cc. of 1 per cent mercurochrome.



*Result.*—After the second injection the temperature dropped to normal and remained normal until patient was discharged August 25, 1927. Recovered.

(12) J. C., female, 36 years old; admitted June 8, 1927, to the Pay Ward.

*Diagnosis.*—Gangrene, little toe (left).

*Treatment.*—Antiseptics and salves; hot applications.

*Results.*—No improvement. Condition got worse. Signs of gangrene advance to foot and ankle. Pain, excruciating. Patient could not sleep at night. Transferred to free ward June 17, 1927 as patient could no longer meet Hospital charges. While amputation was being contemplated, mercurochrome was tried:

June 22, 10 cc. of 1 per cent mercurochrome; June 25, 10 cc. of 1 per cent mercurochrome; June 30, 15 cc. of 1 per cent mercurochrome.

*Result.*—After the first injection, pain subsided and patient was able to have some sleep. After the second does the *dark lines* of gangrenous process disappeared and whole foot looked only red, although still swollen. Every day the condition got better until amputation, got entirely out of question.

July 28, *sequestrum* removed. Bleeding took place freely, and the stump, (base) became painful again and another dose of mercurochrome was given, (15 cc.) July 30.

Discharged on July 31. Recovered: stump-practically dry.

(13) C. V., female, 19 years old; admitted April 19, 1927, complaining of fever pain in the suprapubic region. Delivered outside by "hilot" 4 days previously.

Vaginal examination disclosed purulent discharge from the cervix, White count-18,000 of which 90 per cent were polymorphonuclear leukocytes. Temperature 39 degree C.

*Diagnosis.*—Puerperal sepsis.

*Treatment.*—Uterine drainage and lavage; April 19, given 8 cc. of 1 per cent mercurochrome.

*Result.*—The next day after the administration of mercurochrome the temperature was normal. Recovery was rapid and complete.

Discharged on April 28, 1927. Recovered.

(14) H. R., male, 40 years old; admitted September 21, 1927 in moribund condition. History of having a running ear for the last 6 months. Four days prior to coming to hospital he was seized by a sudden chill, followed by severe headache and high fever. Then condition got worse every day until patient was brought to the hospital in serious condition.

*Physical examination.*—Disclosed an emaciated patient, apparently in critical condition, presenting marked stiffness of the neck; positive Kerni's and Babinski's. Temperature 40 degree C.

Spinal Fluid; turbid; not under tension; 202 cells per field; Organism-not demonstrable.

*Urinalysis.*—albumin (+ + + +), casts—abundant.

*Diagnosis.*—Meningitis secondary to suppurative otitis media; Nephritis, acute.

*Treatment in brief.*—Upon arrival at the hospital proctoclysis with glucose and sodium bicarbonate by the drop method was given; Hypodermoclysis with 1,000 cc. of normal saline to breaths. 10 cc. of antistreptococcic serum intramuscularly; ice cap to the head.

*Day following.*—Another 10 cc. of antistreptococcic serum-given.

*Result.*—No apparent improvement; fever still high, 39 degree C.; Headache was still bad.

September 23, 10 cc. of 1 per cent mercurochrome was given. September 24, hypodermoclysis of 1,000 cc. of normal saline solution. September 25, another 10 cc. of 1 per cent mercurochrome. Remarkable result after the second injection, temperature dropped to normal; *stiffness of the neck-disappeared*; head-acheless marked; patient able to take nourishment freely without vomiting whereas previously, vomiting was very frequent.

During the course of treatment patient was given potassium acetate mixture t.i.d.: cathartic enema once daily for three days; dry cupping to kidney once daily for three days.

Patient showed daily improvement and he was on the way to recovery when his family took him home, September 29, 1927 markedly improved.

(15) J. A., female, 25 years old, pregnant, 8 months; admitted April 23, 1927, complaining of a sudden, acute pain in the abdomen, and *shortness of breath*; pain in the precordium.

*Physical Examination.*—disclosed a very ill patient, emaciated, with high fever, 40 degree C.; with difficulty of breathing and tender precordial region. The heart was not enlarged, but presented a loud *systolic murmur*; bounding beat.

Abdomen-negative-pregnancy-about 8 months.

*Laboratory Examination.*—White count-20,000 with 90 per cent polymorphonuclear leucocytes.

Blood culture—positive for staphylococci.

*Diagnosis.*—Endocarditis, acute, ulcerative; Septicemia.

*Treatment.*—April 25, 10 cc. of 1 per cent mercurochrome; April 28, 10 cc. of 1 per cent mercurochrome; April 30, 12 cc. of 1 per cent mercurochrome; May 4, 18 cc. of 1 per cent mercurochrome; May 8, 20 cc. of 1 per cent mercurochrome; May 16, 30 cc. of 1 per cent mercurochrome.

In addition to the mercurochrome therapy doses of digitalis and morphine given from time to time. Ice cap to heart continuously.

*Result.*—The improvement was gradual and slow until 30 cc. of mercurochrome were given. The temperature up to this time was remittent, averaging 38.5° C. After the administration of 30 cc. of 1 per cent mercurochrome the result was astounding. The temperature dropped to normal and remained normal throughout the convalescence.

Discharged on May 28, 1927. Completely recovered.

(16) Z. R., male, 17 years old; admitted September 4, 1927, complaining of fever, dizziness, headache, extreme weakness of five days duration.

*Condition of patient on admission.*—Extremely weak; unable to turn freely on bed. If helped to sit up, he would fall back to bed dizzy and helpless. Markedly pale and waxy. Mucous membranes, practically colorless. Mentality-clear, but slow to answer questions.

*Examination of chest.*—Lungs o.k.

*Heart.*—Enlarged all areas; Apex beat-diffuse, bounding, forceful, rapid. Loud systolic murmur over apex. Murmur merges with the diastolic sound which is also replaced with a murmur.

These murmurs are transmitted to all directions, toward the axillary line in particular. Over the *Aortic area* both systolic and diastolic murmurs are also heard.

Corrigans pulse- present.

Pistol-shot sound-heard plainly over femoral and brachial arteries.

Duroziez's sign-positive.

Pulmonic second sound-much exaggerated.

Carotid pulsation-visible.

Abdomen-Negative.

Extremities-slight edema of ankles.

Reflexes-negative.

Temperature, 39° C.

*Blood picture.*—Red count 3,390,000; Hemoglob 20 per cent; Leucocytes 16,000; Poly's 84 per cent.

*Urinalysis.*—Negative.

*Blood culture.*—Positive for hemolytic streptococcus.

*Diagnosis.*—1. Multiple valvular lesions due to active endocarditis; Mitral stenosis; Mitral insufficiency; Aortic insufficiency and stenosis.

2. Septicemia—streptococcus hemolyticus.

*Treatment in brid.*—September 7, 10 cc. of 1 per cent mercurochrome; September 9, 12 cc. of 1 per cent mercurochrome; September 12, 15 cc. of 1 per cent mercurochrome.

*Result.*—After the second dose of intravenous mercurochrome the temperature remained practically normal, and marked improvement followed. Patient's condition kept on getting better every day until he was discharged *completely recovered*. September 28, 1927. During the convalescence eggs, milk, green vegetables were given freely. Bland's pills, 2 pills t.i.d. by mouth. Glycerophosphate of iron and strychnine-hypodermically every second day.

*Summary.*—The sixteen cases mentioned above were selected from the fifty-seven patients who were discharged either *recovered* or improved, after having been treated with mercurochrome intravenously. No serious reactions or outward symptoms were noticed in all these 57 cases who happened to be under the care of the writer. The only reaction ever noticed in some of the above cases was a feeling of chilliness or actual chill

one half to one hour after the injection, lasting from 10 to 20 minutes, immediately followed by a rise in temperature one to two degrees centigrade. The rise in temperature is usually followed within two hours by a return to normal, and other signs of improvement. In all the above cases there was urinalysis before and after the administration of mercurochrome. In no case were there found signs of kidney irritation after the use of the drug. The urine, however, appears pink varying in intensity, and lasting from several to 24 hours in proportion to the dosage administered. It has been the practice of the writer to give the next dose after the last voided urine is of normal color.

*Conclusion.*—1. That mercurochrome, when used intravenously in doses of 5 mg. per kilo body weight, does no harm, but many do wonders in many cases seemingly desperate.

2. That many failures are traceable to too small doses. This is illustrated plainly in case No. 15. Not until 30 cc. were given did the patient show rapid and complete recovery.

3. That cases of rheumatic arthritis respond even more readily and to smaller doses, than do cases of gonorrheal arthritis.

4. That it is usually necessary to use several injections before complete cure is attained.

5. That in mercurochrome, as shown by its wide range of application with equal efficacy, we have what is known as *Therapia Eterilisans Magna*.

# GERM ENEMIES OF THE BODY

By MIRIAM E. GRIFFIN, M.D.

## Part I

Diseases which are known as infectious or contagious diseases are caused by germs. There are always many kinds of germs around us but when the body is healthy it is able to resist the germs. When there are a very large number of germs or the body has become weakened, then the germs make one sick. Germs are little plants (bacteria) or animals (protozoa) which are able to grow in the bodies of human beings and animals and cause diseases.

The germs of tuberculosis may be blown about in the dust and typhoid fever germs may be carried by water or milk. Diphtheria germs have been found on drinking cups. The germs are carried in some way from the bodies of persons sick with these diseases for the only place where the germs can multiply is in the bodies of sick persons. Because of this fact all discharges from the bodies of sick people should be destroyed or disinfected so that the germs cannot be spread to others. If every one would always do this many of these diseases would soon be stamped out.

The germs of different diseases enter the body in different ways. Some are introduced by the bites of insects. One kind of mosquito when it bites one introduces malaria, another yellow fever, and another, dengue.

Fleas, carried by rats, spread the germs of bubonic plague, so rat guards are put on the ropes passing from ships to the wharf.

Sometimes germs work their way into the hair follicles and sweat glands of the skin or they get in through scratches and wounds.

The germs of colds, tuberculosis, pneumonia, influenza and other diseases are taken in through the air passages. Hook-worm is taken in through the skin when one goes barefoot.

Typhoid fever, cholera and dysentery germs get into the body through impure water and sometimes with the food, which may be infected by flies, or through being handled by persons contaminated by typhoid, cholera or dysentery germs.

The germs cause sickness very rapidly because of two things: (1) the great rapidity with which they multiply and (2) their power to produce deadly poisons. Most germs multiply by dividing each cell in two and some do this very rapidly. A cholera germ can become full grown and divide into two in twenty minutes. As we all know, people can become sick with cholera and die in a very short time.

The weapons used by the germ enemies in attacking the body are the deadly poisons which they produce. These poisons are called toxins and they really cause sickness by poisoning the cells of the body. Almost all fevers are caused by these poisons. Some of these poisons stupefy one, some irritate and some paralyze.

Even when a person is in good health, the body is constantly being restored in order to keep him in health. When a person has worked until he is very tired he must rest before he can work again. When the stomach digests a meal it becomes very tired and must rest before it can digest the next meal.

The work of repair is done by the power of the body to heal itself. The healthy body is able to defend itself against germs in a variety of ways. The skin cannot be penetrated by germs when it is healthy.

The secretion of the mouth and nose has some power to prevent the growth of germs and even to destroy them. The cells which cover the lungs are constantly catching and destroying germs.

The gastric juice is a powerful germ killer, able to destroy the germs of cholera, typhoid fever and others.

The white cells of the blood are special defenders of the body against germs and the serum of the blood also has the power to destroy germs. When these forces are not as strong as usual and the germs do gain a foothold great injury may be done, as the germ poisons irritate or paralyze the tissues and cause inflammation, pain, swelling and other disturbances.

The body opposes the germs in two ways: (1) by increasing the number of white cells and (2) by forming special substances in the blood, called antitoxins, to act against the toxins made by the disease germs. The white cells inclose the germs and try to kill and digest them.

The battle between the white cells and the germs is like that between two armies. If the cells win the person recovers, if the germs win, he dies.

## GERM ENEMIES OF THE BODY

## Part II

Each kind of germ has its own poison, so the body produces a special antitoxin to kill the poison of the germ by which it is attacked.

Some diseases, such as smallpox one usually has once. A person is immune to the disease and can go among people who are sick with the disease.

The antitoxin seems to remain in the blood for a long time but some diseases one may have a great many times. By means of vaccination people are made immune to certain diseases. Students in the Philippine Islands are quite familiar with this fact because almost every year the nurses and sanitary inspectors vaccinate them to make them immune to smallpox and give them injections to make them immune to cholera, typhoid fever and dysentery.

As people are in constant danger of being attacked by germs it is necessary to know how to protect oneself from attacks. The Philippine Health Service is constantly busy finding out what germs are about and telling people what to do to escape them. The sanitary inspectors visit the markets to see that the food is healthful and clean. They examine houses and yards to see that the garbage is kept in covered pails away from flies, that there are no breeding place for mosquitoes and that everything is clean and sanitary.

The health authorities examine the drinking water to see that it is pure.

In the World War, special attention was paid to sanitation. Before the army reached a place all the wells were tested and labeled so that the soldiers would know whether the waters was fit to drink. Officers sampled all the food, fruit, and vegetables sold along the line of march. The sanitary conditions of every town was examined and if there was any danger from infection, the place was quarantined and guarded.

In the camps the soldiers were taught how to protect themselves. As a result there were very few cases of germ diseases, while in the Spanish American War, the death rate from preventable diseases was 70 per cent. Only 268 men were killed by bullets, while 3,862 died in the hospitals. This shows what public health work can do.

The care of the house is very important. The dust in the house is very dangerous. It contains germs brought in from the

street on the feet or that have floated in the air, especially those of tuberculosis and other respiratory diseases.

One should not sweep in such a way that the germs are stirred up.

The kitchen, closets, sinks, etc. need frequent cleaning.

Sunlight is Nature's great disinfectant so the sunlight should be admitted to all parts of the house.

Fire is the best of disinfectants. Germs producing matter should be burned whenever possible.

Ordinary boiling, continued for half an hour, will destroy many kinds of dangerous germs.

Beside public and domestic hygiene there is personal hygiene, learning certain habits which will keep the germs out of the body and will keep the body strong enough to kill them if they do enter.

By touching money, other people's books, pencils, hands, etc., one may get germs. These may get into the mouth with the food or into the eyes. By washing the hands with soap this may be prevented. Drinking from a cup used by another person is another way by which disease germs may enter the body. One should always use one's own cup.

Avoid putting into the mouth pencils, money or other articles handled by others.

One should remember that common colds are really contagious. To say "I have caught a cold" is really true as we get them from other people who have them.

Some people are "cold carriers" always having in the nose and throat the germs which cause colds and if they lower their resistance by loss of sleep, by breathing impure air, by becoming over heated or greatly fatigued, by getting chilled, by becoming constipated, by over eating, especially meat or rich food then the germs take advantage of this lowered resistance of the body, multiply rapidly and produce the poisons which cause the fever and discomforts which go with a cold.

You should keep away from people who have colds, while the person having the cold should avoid close contact with other people, should hold a handkerchief over the mouth when coughing or sneezing and take great care to avoid infecting books, or anything else which is to be handled by others.

There are almost always disease germs in the body but they need not be feared if we keep the body well by proper food, sleep, exercise, cleanliness and fresh air.



## KEEPING THE BODY HEALTHY

BY DR. M. E. GRIFFIN

### III. Exercise

The framework of the body is made of bones. The bones not only support the body but they protect the internal organs. But it is the muscles attached to the bony framework which enables us to hold the body erect and to walk and run and jump.

It is very important that all the muscles of the body be kept strong and healthy. There are several things needed to do this and one of the most important is exercise.

Every boy wishes to be fine looking and every girl wishes to be pretty and no one can be either unless the body is properly developed and the posture is good. Unless one sits and stands erect the lungs are cramped so that one does not breathe properly and the other organs will not be in their proper places so one cannot work properly. If a boy or girl or man or woman does not hold the body erect and move easily they look lazy and inefficient or awkward and slouchy.

It is only by exercise that the body can be kept supple and the muscles elastic. If the muscles of a certain part of the body are not used in such a manner as to stretch them, they may become shortened and after this stretching them will be impossible.

The vertebrae of the spinal column are moved by the contracting and lengthening of the muscles attached to them. When the spine is curved on the left side the muscles on the right side contract and are shortened and a curvature of the right side means a shortening of the muscles on the left side. When the body is sitting, standing, or working is habitually held in an improper position some of the muscles may become permanently shortened, causing the deformity called spinal curvature.

It is very important to remember that the bones are affected by what we eat. If the bones are to grow large and strong, the food must contain plenty of lime. Lime is found in all kinds of green vegetables as turnip tops, camote tops, beet tops, in milk, in yolk of eggs and in oatmeal and wheat. Almost no lime is found in white bread, in rice, potato or meat. Nor should one forget that lime is also needed for the teeth.

If one does not use the muscles they grow weak and flabby. If the lungs are to work well they must be developed by exercise and the heart and the liver and other organs will not keep well enough to do their work properly unless they have regular exercise.

One can injure oneself by too heavy work, carried on several hours a day, but running, playing games, such as tennis, volley ball, base ball, etc. and swimming are very good for one. It is good for one to be skilful in a number of games and other forms of exercise but not to spend several hours a day on one form of exercise.

We should remember that there are two kinds of muscles, those which work when we make them and those which work without our control. The muscles of the heart, lungs and digestive tract work without our knowing it, but they are made stronger by exercise.

Exercise must be taken every day, for it is needed, just as one needs food and drink. There are three kinds of exercise, gentle, moderate and violent.

Gentle exercise does not make one tired or out of breath and is good for weak or sick people. Riding in an auto or walking slowly is gentle exercise.

Moderate exercise may make one tired if kept up long but not out of breath. Walking at the rate of five kilometers an hour, light gymnastics and swimming and ordinary work come under this heading.

Violent exercise puts one out of breath, and quickly tires one. Moderate exercise is best, as a rule. Violent exercises, such as hard running, climbing, and jumping the rope, should only be continued for a few minutes at a time.

Tobacco lessens the power of a muscle to work.

Girls should not take as violent exercise as boys can. Basket ball, base ball, swimming, tennis, golf, hiking, volley ball, and other games like tag, and hide and seek are good for them.

The Camp Fire and Boy Scout organizations furnish healthful exercise.

## KEEPING THE BODY HEALTHY

### IV. Breathing

People cannot live without breathing and many serious illnesses such as tuberculosis, influenza, pneumonia and common colds are the result of breathing in disease germs by an unhealthy respiratory tract.

The organs which take part in breathing are the lungs and air passages. The lungs are located in the chest, a box like compartment, whose walls are made of long, flat bones called ribs. The two lungs, a right and a left, are placed one on each side of the chest with the heart between them.

Extending to the lungs from the outside by way of the nose and mouth are the air tubes, the main one being called trachea, or windpipe. After a short distance this tube divides into two smaller tubes called bronchi, one leading to each lung. The bronchi divide into still smaller tubes and these into still smaller ones, until they are very small and seem like the branches and twigs of a tree. Finally the tiny tubes end in air spaces or air sacs. To reach the lungs, air passes through the nose and throat and then enters the trachea.

The nose is intended for breathing while the mouth is meant for a food passage. The mouth and nose join in the back of the throat in what is called the pharynx. The pharynx continues down opening into two tubes, the windpipe, and back of it the food pipe. The top of the windpipe is closed by a trap door of muscle, that closes over the windpipe when we drink or swallow food. Sometimes a little food or water enters the windpipe and then one chokes.

The nostrils are two narrow chambers separated by a thin wall. These passages connect the outside with the throat and windpipe. The nostrils warm the air as it enters and filters it as it passes over the fine hairs which line the nostrils and which keep dust and dirt from entering the lungs. From the back part of the nose, on each side, a tube extends to the middle ear to balance air pressure and a tube from each lower eyelid carries excess tears to the nose. At either side in the back of the throat are the tonsils, small round glands. Sometimes the tonsils are large or diseased and then they should be removed as they make breathing difficult and cause colds and sore throats as well as serious diseases of the heart and other organs.

The lungs are very delicate and could easily be injured. If the air is too cold when it reaches the lungs it chills the delicate membranes and there may be dust in the air we breathe. The tiny hairs in the nose will remove the dust if the nose is kept clean. Frequently, children do not use their handkerchiefs often enough. Every child should have a clean handkerchief every morning and should use it when necessary. When blowing the nose into the handkerchief the nostrils should not be closed as the ears may be injured. If one has a very

bad cold and must use the handkerchief often it is better to use some soft paper and burn it in order to prevent the spread of disease germs.

If one breathes through the mouth the air is not warmed before entering the lungs and the mucous surfaces of the mouth and throat become dried. Adenoids, tissue growths in the back of the nose cause mouth breathing. Unless they are removed the breathing is seriously interfered with and the general health is affected.

People who are healthy breathe without thinking, drawing oxygen into the lungs after which it passes through the thin walls into the blood cells, while carbon dioxide passes from the blood cells to the air. The blood cells, loaded with oxygen go to the heart and the heart pumps these cells to the tissues all over the body. While the chief function of breathing is to furnish the cells of the body with plenty of oxygen and to remove the carbon dioxide, it also carries off some excess water from the lung. For proper breathing one must have a good supply of fresh air to furnish the oxygen. The purer the air, the less is the danger of damaging the lungs. Air out of doors is usually purer than that in houses. In the open air there is also a chance for the action of sunshine, one of the great purifiers.

When the body needs fresh air it shows it by stopping work and becoming sleepy. By getting into the fresh air one feels better.

The air is made dangerous by the presence of certain poisonous gases. In certain kinds of work these occur, as when gasoline and gas are used in closed places. One should never sleep in a closed room as the impure air causes restless sleep and bad dreams.

Dust, whether in the open air, or in rooms and shops irritates the mucous membranes of the respiratory system. Disease germs may be carried in particles of dust.

Besides pure air, we need proper habits of breathing. One must breathe deeply if the lungs are to receive their full supply of oxygen with each breath. Oxygen is the substance that produces the red color of the blood and the rosy, healthy color of the skin. Pale, sickly looking people are often so because of bad breathing habits, lack of fresh air and exercise, or to a defect in the breathing apparatus. Exercise develops the habit of deep breathing.

The passages leading to the lungs should be free from obstructions, such as adenoids, or enlarged tonsils.

If the nose is partly closed by some obstruction the air reaches the lungs without being warmed and cleaned and in reduced quantity.

The work of the muscles that lift and lower the chest in breathing requires some energy. Weakness, due to malnutrition, may interfere with the proper work of the chest. Poor posture in standing or sitting also cramps the chest and weakens the muscles.

Any of the things which affect breathing tend to cause colds, pneumonia, influenza, and tuberculosis.

Things to remember—

One takes thousands of breaths every day without thinking about it but one should always remember to have fresh air to breathe.

There would be far fewer cases of colds, tuberculosis and influenza if every person would cover the mouth and nose when sneezing or coughing and would never spit on the floor or ground.

## THE GAPS THAT SHOULD BE FILLED IN

---

Undoubtedly the teachers are exerting all efforts to teach hygiene and sanitation in the schools. They teach the subjects in books and in practice. They impress the simple rules of hygiene upon the minds of the school children of the primary and intermediate grades. The same subjects are given in the secondary schools. The teachers are largely responsible in moulding the health education of the youngsters at their early age.

The children are given the lessons on hygiene regularly every week. They are asked to put in memory the commonest and simplest rules on the subject that have applications in their every day life. They are told and perhaps explained what they should do for their health and for the prevention of sickness. They are also told that to be healthy is to be happy at all times.

They are shown the practical uses of hygiene in the schools. They can see them with their eyes, as these things stand out in the work of the schools and of the school teachers.

The school children are told to wash themselves every day, comb their hair, brush their teeth, and to come to school with clean clothes. They are told of the importance of wearing shoes, slippers, or wooden shoes. They are told of many different other things to keep their bodies clean in every way.

The schoolhouse is an example of sanitation of a high degree. In the premises are plotted beautiful gardens. The premises are clean. Pieces of papers thrown promicuously by the children are picked up. The desks are washed with soap and water and placed under the sun once a week. The floor is floor-waxed, and a rag is placed at every door to clean shoes and slippers with. the sputum is placed in a proper receptacle.

The schools are provided with an adequate water container from which the children take their drinking water in individual paper cups provided for them. There are also lavatories provided with soap and water in which they can wash their hands and wipe them with paper towels or cloth towels. They also bring towel with them in a well designed hand-bag purposely for these and their books.

Sanitary toilets are constructed. The children are told to use them every time they feel like moving their bowels, or throwing water. The toilets are cleaned and disinfected. Pans with water are provided, and they wash their hands after coming from the toilets.

In the domestic science rooms, the girls are taught to cook all varieties of foods of the Filipino style. They are taught how to prepare the table and to use the knives, forks and spoons to get rid of the use of hands. They also learn how to prepare the beds in the homes. All these things tend to teach them housekeeping.

These things are done within the schoolhouse. What about outside of the schools—in the homes of the schoolchildren? Do the children practice these things that are being taught to them? Do gaps exist, and if there are, who are responsible to fill in these gaps?

The gaps mentioned above occur in the homes of the schoolchildren and the people. These homes are not within the jurisdiction of the teachers. They are within the sphere of action of the medical health officers, public health nurses and the sanitary inspectors, who are called for to safeguard the health of all communities. They are the ones to fill in the gaps to complete the cycle of health betterment.

The medical health officer shall direct the campaign. He plans the attack at all angles. He starts a campaign for the beautification of the homes and the cleaning of the premises. He devises adequate disposal of excreta, the cost of which shall be within the reach of the people. He adopts the water container with faucets to be used by the people, and wages a campaign for the drilling of artesian wells and for discouraging the use of other sources. Of course, he will also adopt other measures. His plans should coincide with those given, in a practical way, in the schools. In other words, these plans are for follow-up work.

The public health nurses may help in the campaign to a great extent. They can carry out this work most effectively by forming Healthy Clubs in the schools. The aim is to solicit membership among the schoolchildren. When there is a sufficient number of members, she gives them talks based upon the plans outlined by the medical health officer. After the program of talks and instructions have been completed, she makes inspections in the homes of the schoolchildren to see whether or not

her instructions are being followed. Those that have followed them strictly should be given a Roll of Honor Health Certificate, which are only obtained by competition. These certificates should be prepared at the office of the District Health Officer upon being notified of the result of the competition. This gives the schoolchildren the initiative to do the best they can, and to attract more members in the club.

The sanitary inspectors can better help in the campaign. They see that the plans outlined by the medical health officers are being put into practice by inspecting the homes of the schoolchildren as often as possible. They inform the medical health officers of the conditions found, and they received instructions from the latter as to what other things else should be done.

It is expected that with these programs as outlined, the gaps between the schoolhouses and the homes of the schoolchildren can be filled in. Successful results are not, however, expected in a fortnight. They have to be done gradually and slowly until these health habits have been moulded more or less permanently in the minds of the schoolchildren. Then the problem of instilling these health habits in the future generations to come will then be easy. This is worth trying. Why not!



## SANITATION AMONG PLANTATION LABORERS

By JOSE P. BANTUG, M.D.

In our onward march to progress, sanitation among rural communities has not been neglected. In fact, were we to sum up the whole situation, we would find that it is in those localities where we have made more substantial achievements. The vital index among them is becoming higher and higher. And in the better developed "haciendas," conditions are even better than in many of the ordinary provincial towns. Take for instance the situation in the plantations of the provinces of Davao and Occidental Negros where laborers are quartered in sanitary houses. The disposal of garbage and refuse is done at regular intervals, and free medical relief is accorded not only to the laborers themselves, but is extended to their families as well. In some "haciendas" regular hospital service is maintained with appropriate technical and subordinate personnel, and some smaller "haciendas" group themselves into three or four for the purpose of securing the services of a regular physician.

In speaking, however, of sanitation among plantation laborers, it will be necessary to throw some hints here and there, in order that life in these plantations may be enjoyed to the full advantage of both patron and laborer.

In the first place, attention must be given to the selection of sites for the houses. When the population is large enough to need the organization of the group into a small barrio, it is necessary that the site to be selected be adequate as regards location, size, and access to the place of work. Alignment of the houses need be looked into, and enough yards space allotted not only for the better circulation of air, but also to provide the children of the family with a playground and a garden wherein to raise home vegetables. The house itself need not be large, but it is essential that it be made of best material available, and while board floor and sidings are recommendable, with iron roofing it can as well be made of bamboo and nipa. As has been said by a former Assistant Director of Health, a well constructed nipa house, provided with modern conveniences, is one of the most sanitary dwellings that can be erected in the tropics.

Certain indispensable divisions must be provided. The kitchen must be separated, otherwise, the smoke coming from the stove may penetrate the living rooms and so vitiate the air for its inhabitants. The sleeping quarters must be provided with plenty of light and ventilation. And the room facing the east should be selected for this purpose. Separation of the sexes is imperative, especially for the grown-ups, because it has been amply demonstrated that many of the crimes against chastity have been due to the one-room affair, so common among the poorer classes of our population.

In order to make the surroundings more nearly home-like, shade trees and flowering plants should be planted. Bananas, which are easy to cultivate, should find a plot in the back yard. Provision should be made that rain water is easily drained off from the ground. And in the absence of a sewer system, or regular septic tank, a dug-well should be provided for the waste water from the kitchen, the top of which to be covered, over a matting of bamboo, with earth. Excess water may be drained off by building covered ditches filled with coarse stones, so that the water will trickle and be absorbed along its course.

The matter of fecal disposal is of the utmost importance in the sanitation of the farming community, because, if the surface disposal is to prevail as heretofore, it is easy to spread infection of the so-called water-borne diseases, either thru the agencies of domestic fowls and pigs or the infection may be carried from its place of deposit to other parts of the yard after a heavy downpour. And as most of the farm laborers go barefooted, especially when going about their work, hookworm infection may easily be contracted.

The house refuse should be collected in a covered receptacle and the combustible part destroyed by fire and the rest disposed of by burying. Manure should be collected in one corner of the lot, as this is of great economic importance, especially in rice plantations, when the crop is about to be harvested.

In the matter of water supply, if a spring is near at hand, it should be so protected as to prevent contamination at its source, otherwise, either the "hacienda" owner or the municipality should be induced to dig an artesian well for the use of the community, or a properly built dug well, with stone sides, covered with cement, and provided with a hand pump, should be made available and its use regulated for the benefit of all concerned.

Wherever possible, a recreation center should be provided and the children with a playing ground. The matter of affording laborers means for a healthful recreation has been somewhat neglected, so that in their absence, the grown-up men have to resort to games of chance or pass their time in the cockpits, while the young folks are left to drift along with resulting mischiefs as the outlet of their excess energy. The success of any plantation depends upon the individual efficiency of the farm hands, and, therefore, it is incumbent upon the management to afford such medical relief as are easily available for the preservation of the health and the relief of suffering of the entire population. In this connection, the work of the physician should not be confined with treating only the sick, but must give out such sanitary informations, and in the simplest language possible, to adults as well as to the young, regarding the preservation from the more common communicable diseases, like malaria, cholera and dysentery, and administer the preventive inoculations against them.

There is probably no group of the population which is so readily amenable to sanitary improvements as are the communities living in the "haciendas," because the question of crowding is not a problem among them and housing facilities may be made as sanitary as possible.

## THE WORK WITH UNEXPRESSED REWARDS

By TEOFILO CORPUS

Man does not live by himself alone. If he does, his existence is not justified. Certainly he is happy to see people around him also enjoying happiness and health. He untiringly seeks ways for the amelioration of illness and for the conservation of health in a community.

Such is the work of the medical health officer, the public health nurse, or the sanitary inspector. Of course, each works for remuneration, and this is very natural indeed. One thing in him, however, speaks of itself. He lifts his forehead, and confesses that he works at heart. He never falters, and always goes forward—to his goal.

These guardians of health do not tread on a smooth path. They meet hardships and difficulties. They are sometimes being accused of neglect of duty, disobedience to orders, of strictness in carrying out their work, such as enforcing regulations on an adequate disposal of excreta, the capturing of astray animals, the cleaning of houses and premises, the provision for pure water supply, the isolation of dangerous communicable diseases, and many thousand things. These, in many cases, do not meet the favor of the people.

However, these are not mere gestures. He has personal grudge towards none. His noble intention is nothing more than to safeguard the health of the community. If he disobeys orders, and neglects his duty, the penalty of the law is imposed upon him just the same. He is not immune to the penalties of the law and does not have any privileges at all.

His duty differs from that of others. The military men fight in battles. They fight with guns and cannons. These health workers fight an invisible enemy—the germs. When an epidemic of cholera occurs, they control all possible sources of origin. They kill the enemies with the disinfecting pumps and disinfectants.

The beauty of health work can be expressed in many ways. It is instructive and interesting. It is instructive, because the health and sanitation of the people are dealt with. It is interesting, because the communities are the patients, where health is safe-guarded and their state of sanitation elevated.

The medical health officer is an expert in the field of public health. If infectious and communicable diseases exist, he immediately traces the origin in foods and drinks, water, excreta, mosquitoes and flies or other formites, or in the persons themselves. If the origin is foods and drinks, he prohibits their use. If from water, he adopts means for the purification of water. If pollution from human excreta, he orders the construction of and adequate disposal. If from insects, he gives instructions to use mosquito-nets, or to kill flies by various means. And if from persons, he isolates them. In this way, he stamps out disease, and rids the people from danger.

The public health nurse is the angel that brings the message of health directly to the homes. She brings with her the soothing balm of health. She comes in contact with both the rich and the poor. She is born with no discriminations, and looks upon all alike. She is a friend of the children, the mothers and the sick. She bathes the babies, and treats their ailment. She teaches the people the simple rules of hygiene. She informs the health officer of any existing disease for action. The nurse goes home happy after she finds everything satisfactory.

The sanitary inspector is the watch-dog of health and sanitation. He sees that pigs do not go astray. He supervises the cleaning of streets, markets and slaughterhouses. He orders the cleaning of the premises. He sees that foods and drinks are safe for use; and that people are using the right kind of toilets, and the pure kind of water for drinking. He disinfects all houses, places and premises for the suppression of dangerous diseases. He goes home, after a well-earned days' work; at times worried, because of opposition of the people, and at times pleased and satisfied, because he feels he has done his job well.

This, in general, is the work with unexpressed rewards. The rewards automatically come after a long untiring and persistent service for the communities and people. When the people begin to enjoy good health and up-to-date sanitation, then and only then the work of the medical health officer, the public health nurse and the sanitary inspector are rewarded. Drink to the health of all public health workers!

## MISCELLANEOUS

---

### BATANGAS

There were 137 persons who were given injections with pure cholera, 118 with mixed vaccine and 101 against dysentery; 19 schools were inspected and 2,137 school children were physically examined by Presidents Sanitary Divisions and District Nurses; 137 antipolo closets were being constructed and repaired in 14 municipalities.

### BULACAN

The outstanding accomplishment during this month were: The intensification of cholera vaccination; the request of this office for ₱1,206 for filling and fencing the premises of the Sibul Springs dispensary is hereby reiterated; an ordinance was prepared regulating the manufacture of vinegar in the municipality of Paombong.

### DAVAO

The vaccination of school children against typhoid and cholera in the municipalities of Baganga and Cateel is considered an outstanding accomplishment during the month of September; the general vaccination work against smallpox in the municipal district of Sagabay and the eradication of trachoma among school children in the municipality of Cateel is also an activity of importance.

The general health condition: Malaria and influenza were the prevailing diseases in the province during the month. Isolated cases of amoebic dysentery and typhoid fever were also registered.

### SORSOGON

In Magallanes besides the anti-cholera injections performed, we searched the stores for deteriorated canned goods and found five cans of deteriorated sardines which were condemned. Several loose pigs and many houses without antipolo toilets were found.

General health condition: The inhabitants of this district have enjoyed good health during September, although few suspected cases of typhoid have reported in the barrio of Abuyog, Sorsogon. The prevailing diseases during the month were tuberculosis, bronchitis and convulsion of infants.

### SULU

A general campaign for the confiscation of deteriorated caned food stuff was made during the month with a successful result. Final condemnation, however, of the confiscated good is not yet decided, pending the receipt of an information desired from the central office.

### IMPORTANCE OF COMPLETING THE SERIES OF INJECTIONS IN PROPHYLACTIC VACCINATIONS

The Philippine Health Service now employs several kinds of prophylactic injections for the prevention of Asiatic cholera, Typhoid and paratyphoid fevers and Dysentery. The injection of each of vaccine, is given in a

series of three for about three weeks, with one week interval between the injections. This is necessary because of the fact that the protective elements that develop inside the body as a consequence of these inoculations take sometime to complete, nor is it advisable, according to our present experience to give all the three injections at once because of severe reaction that may follow such injections. A thorough and complete protection can only be acquired after the series is completed, and it is for this season that we should like to warn the persons who have received the first or second inoculations to complete the series of three in order to be sure that the protections given is dependable.

#### THE PHILIPPINE ANTI-LEPROSY SOCIETY

The Philippine Anti-Leprosy Society is out on a drive for more funds. This society is one of the few deserving ones that is trying to do its best for the amelioration of conditions among unfortunate lepers. It is a non-stock holding corporation and its resources must be derived from membership fees and private donation. Yet, inspite of all these handicaps it has been able to help the unfortunate lepers in more ways than one. The society has donated a laundry equipment, a motion picture machine and films, a dormitory building for the sick, text books and library facilities for the Culiions School, clothing medicines, shoes, toys for the children, and even musical instruments.

The society is at present beginning to make an intensive campaign to disseminate true knowledge of leprosy among the people.

#### SEWER CONNECTIONS

The premises connected with the sanitary sewer in the city of Manila up to April 30th last were 7,713 and during the month of May 17, additional ones were completed. These premises represent practically all the strong material buildings served by the sanitary sewer, which, as it is well known, cover about one-third only of the total area of the city. During the month of May, 142 strong material plans were approved by the Division of Sanitary Engineering of the Philippine Health Service and only 17 premises were connected with the sanitary sewer. This would represent about one-tenth of the total buildings constructed with the sewer. The majority of these houses are found in the so called extensions and in places of the city not served by the sanitary sewer.

#### ANTI-MALARIA CLINIC BEGINS OPERATION

The anti-malaria clinic operated in connection with the Division of Malaria Control begun operations with six cases, five positive and one negative. All of these cases came from the provinces and were in attendance at the clinic personally except one. They came from the provinces of Nueva Vizcaya, Laguna, Batangas, Davao, Abra, and Rizal. The case from Davao was brought in by an American; the case from Rizal is now in Baguio but a blood smear was sent over by mail with positive findings. This particular case was a former resident of Novaliches, Rizal. The cases were given a week's supply of quinine, to return weekly for blood examination and supply of drug. This practice is found necessary for the purpose of observing the reaction of parasite to the drug and to see how long is it necessary to continue the treatment.





## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of September, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1928<sup>1</sup>

#### BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>324,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

#### BY DISTRICTS

Districts	Population
<b>No. I, MEJIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
<b>Total.....</b>	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,347
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,987
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,663</b>
<b>Grand total.....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, SEPTEMBER, 1928**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	755.80	26.8	31.9	1	23.5	9	29.9	30.0
11-20.....	56.44	26.6	32.1	20	23.6	20	29.9	29.8
21-30.....	57.24	26.3	31.2	23	23.3	27	28.7	28.7

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	86.7	89.3	6	83.9	9
11-20.....	87.0	90.2	19	83.6	13
21-30.....	86.8	92.4	25	79.0	23

Date	Prevailing direction	Wind			Atm. idometer <sup>3</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	SW.	3,051.5	528.5	4	19.6	4.0	9
11-20.....	SW.	2,692.0	366.5	20	19.0	3.0	12, 13
21-30.....	SW.	3,021.0	413.5	26	12.6	3.8	23

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	23 50	6 40	9, 10	71.3	9
11-20.....	29 00	7 55	12	164.5	10
21-30.....	18 10	5 45	29	219.4	10

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Cor-  
rection to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters  
above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rate per 1,000
Americans.....	3	9	12	46.62
Filipinos.....	610	583	1,193	48.70
Spaniards.....	2	1	3	18.68
Other Europeans.....	3	.....	3	32.44
Chinese.....	32	35	67	45.68
All others.....	5	7	12	66.83
<b>Total and average.....</b>	<b>655</b>	<b>635</b>	<b>1,290</b>	<b>48.40</b>

**NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MEJIC:</b>							
1. Tondo.....	156	159	315	4	4	8	323
2. San Nicolas.....	40	32	72	1	4	5	77
3. Binondo.....	26	34	60	1	.....	1	61
<b>Total.....</b>	<b>222</b>	<b>225</b>	<b>447</b>	<b>6</b>	<b>8</b>	<b>14</b>	<b>461</b>
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	83	71	154	11	6	17	171
5. Quiapo.....	27	14	41	4	1	5	46
6. San Miguel.....	8	7	15	.....	1	1	16
7. Sampaloc.....	107	91	198	8	6	14	212
<b>Total.....</b>	<b>225</b>	<b>183</b>	<b>408</b>	<b>23</b>	<b>14</b>	<b>37</b>	<b>445</b>
<b>No. III, PACO:</b>							
8. Port Area.....	.....	.....	.....	.....	.....	.....	.....
9. Intramuros.....	25	29	54	1	2	3	57
10. Ermita.....	39	23	62	2	3	5	67
11. Malate.....	51	70	121	3	2	5	126
12. Paco.....	30	44	74	2	.....	2	76
13. Pandacan.....	10	12	22	.....	2	2	24
14. Santa Ana.....	13	18	31	3	.....	3	34
<b>Total.....</b>	<b>168</b>	<b>196</b>	<b>364</b>	<b>11</b>	<b>9</b>	<b>20</b>	<b>384</b>
<b>Grand total.....</b>	<b>615</b>	<b>604</b>	<b>1,219</b>	<b>40</b>	<b>31</b>	<b>71</b>	<b>1,290</b>

Attended by physicians, living, 437; Stillbirths, 29.

Attended by midwives, living, 108; Stillbirths, 0.

Attended by families, living, 745; Stillbirths, 28.

**NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE  
CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	3	.....	3	11.65
Filipinos.....	286	269	555	22.65
Spaniards.....	1	.....	1	6.23
Other Europeans.....	.....	1	1	10.81
Chinese.....	23	4	27	18.41
All Others.....	2	1	3	16.71
<b>Total and average.....</b>	<b>315</b>	<b>275</b>	<b>590</b>	<b>22.13</b>

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA  
BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MERCED:</b>			
1. Tondo.....	85	83	168
2. San Nicolas.....	24	18	42
3. Binondo.....	19	5	24
<b>Total.....</b>	<b>128</b>	<b>106</b>	<b>234</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	54	44	98
5. Quiapo.....	16	14	30
6. San Miguel.....	4	4	8
7. Sampaloc.....	44	50	94
<b>Total.....</b>	<b>118</b>	<b>112</b>	<b>230</b>
<b>No. III, PACO:</b>			
8. Port Area.....	.....	1	1
9. Intramuros.....	8	8	16
10. Ermita.....	5	7	12
11. Malate.....	31	16	47
12. Paco.....	15	12	27
13. Pandacan.....	7	5	12
14. Santa Ana.....	3	8	11
<b>Total.....</b>	<b>69</b>	<b>57</b>	<b>126</b>
<b>Grand total.....</b>	<b>315</b>	<b>275</b>	<b>590</b>

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	117	84
Divorced.....	.....	1
Widowed.....	29	34
Single.....	222	179
Conditions not stated.....	1	.....
<b>Total.....</b>	<b>369</b>	<b>298</b>
<b>Grand total.....</b>	<b>667</b>	

Stillbirths ..... 57

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	83	83	8	4	178
1 year plus.....	17	21	2	4	44
2 years plus.....	7	11	1		19
3 years plus.....	7	5			12
4 years plus.....	3	10			13
5 to 9 years.....	12	8	2	1	23
10 to 14 years.....	6	3			9
15 to 19 years.....	15	10	6	6	37
20 to 24 years.....	23	14	11	3	51
25 to 29 years.....	15	18	6	1	40
30 to 34 years.....	11	6	4	1	22
35 to 39 years.....	14	11	3		28
40 to 44 years.....	18	13	1		32
45 to 49 years.....	14	9	2		25
50 to 54 years.....	16	14	2		32
55 to 59 years.....	8	8	1	1	18
60 to 64 years.....	10	4	1	1	16
65 to 69 years.....	13	5	2	1	21
70 to 74 years.....	4	6			10
75 to 79 years.....	7	3			10
80 to 84 years.....	5				5
85 to 89 years.....	1	4			5
90 to 94 years.....	2	2	1		5
95 to 99 years.....	3	6			9
100 years and over.....	1	1			2
Age not stated.....					
Total.....	315	275	53	23	666

NOTE.—One male Filipino, age and permanent residence unknown not included in the above table.















## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

Internationalist numbers (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
165-203	<i>XIV. External causes</i>													
166	Suicide by corrosive substances.....													1
182	Accidental drowning.....			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	<i>b. Street-car accidents.....</i>			1										1
189	Injuries by animals (not poisoning).....			1										1
197	Homicide by firearms.....			1										1
198	Homicide by cutting or piercing instruments.....			1										1
	Total.....	52	22	1						1				76
	Grand total.....	74		1						1				76

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF  
MANILA, DURING THE MONTH OF SEPTEMBER, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month		
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days				
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All causes .....	91	87	12	9	11	8	5	2	6	6	3	6	37	31
Communicable diseases:														
Typhoid and paratyphoid fever (1)														
Smallpox (6)														
Measles (7)														
Whooping cough (9)														
Diphtheria (10)														
Influenza (11)														
Asiatic cholera (14)	1	2												
Dysentery (16)														
Meningococcus meningitis (24)														
Other epidemic and endemic diseases (25)														
Tetanus (29)	1	1			1					1			1	1
Other infectious diseases (1-42) <sup>1</sup>	21	21	1	2	3	2	1	3	3	1	4	9	11	
Beriberi (56)	3	2												
Diseases of the nervous system (70; 71; 80; 85)	23	34												
Respiratory diseases (99; 100; 101; 107)	4	4												
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)	1	1											1	1
Congenital malformations (159)	30	19	10	8	5	3		3	3	2	1	26	17	
Early infancy (160; 161; 162; 163)		3	1											
All other causes (43-205) <sup>1</sup>														

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF SEPTEMBER, 1928 (INCLUDING TRANSIENTS)—Continued

(Stillbirths not included)

Causes of death	Age at death under 1 year														Total under 1 year							
	1 month + months +		2 months + months +		3 months + months +		4 months + months +		5 months + months +		6 months + months +		7 months + months +		8 months + months +		9 months + months +		10 months + months +		11 months + months +	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All causes.....	8	5	14	11			3	4	1	11												
COMMUNICABLE DISEASES:																						
Typhoid and paratyphoid fever (1).....																						
Smallpox (6).....																						
Measles (7).....																						
Whooping-cough (9).....																						
Diphtheria (10).....																						
Influenza (11).....																						
Asiatic cholera (14).....																						
Dysentery (16).....																						
Meningococcus meningitis (24).....																						
Other epidemic and endemic diseases (25).....																						
Tetanus (29).....																						
Other infectious diseases (1-42) 1.....																						
Berberi (56).....	3	2	6	4	1	1				2												
Diseases of the nervous system (70; 71; 80; 86).....																						
Respiratory diseases (99; 100; 101; 107).....	3	2	1	6	2	1	1	7	1	2	3	2	4	3	1	4	1	3	3	1	1	
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....																						
Congenital malformation (159).....																						
Early infancy (160; 161; 162; 163).....	2	1	1	1																		
All other causes (43-206) 1.....																						

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set .....	22,680
Number of rats caught by spring traps.....	2,595
Number of cage wire traps set.....	600
Number of rats caught by cage wire traps.....	1
Number and kind of baits (coconuts).....	23,880
Number of poison portions placed.....	17,522
Number of rats found poisoned.....	260
Number of rats killed by clubs and other weapons.....	1,085
Number of rats found dead from other causes.....	410
Total number of rats otherwise caught, found dead or killed .....	4,521
Total number of rats sent to the laboratory for examination .....	4,521
Total number of rats found positive for plague.....	0

TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF SEPTEMBER, 1928, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	No. 1.....	4	1	5	3	2	1	1	7	3	6	2	13	5
	No. 2.....	3	1	1	.....	.....	1	1	3	1	2	1	5	2
	No. 3.....	1	1	.....	.....	.....	.....	.....	1	1	.....	.....	1	1
II.....	No. 4.....	6	2	1	1	1	.....	.....	7	3	1	1	8	4
	No. 5.....	3	1	2	.....	.....	.....	.....	3	1	2	1	5	2
	No. 6.....	2	.....	2	.....	.....	1	1	.....	.....	3	1	3	1
	No. 7.....	4	.....	6	.....	.....	.....	.....	4	.....	6	.....	10	.....
	No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
III.....	No. 9.....	5	.....	1	.....	.....	.....	.....	5	.....	1	.....	6	.....
	No. 10.....	2	1	1	.....	.....	.....	.....	2	1	1	.....	3	1
	No. 11.....	4	1	1	.....	.....	.....	.....	4	1	1	.....	5	1
	No. 12.....	1	.....	1	1	1	.....	.....	1	.....	1	1	2	1
	No. 13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Grand total.....	33	8	21	4	3	3	3	37	11	24	7	61	18

## REMARKS:

Cases confirmed as Typhoid Fever.....	61
Cases confirmed as Paratyphoid Fever.....	0
By autopsy.....	.....
By blood culture.....	1
By Widal reaction.....	2
By urine examination.....	20
By feces examination.....	0
By clinical symptoms.....	0
Cases reported among nonresident persons not included in the table.....	38
Deaths reported among nonresident persons not included in the table.....	27
Typhoid Carrier—None.....	10



CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	No. 1.....	.....	.....	.....	2	2	2	2	2	2	2	2	4	4
	No. 2.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
	No. 3.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
II.....	No. 4.....	1	.....	.....	.....	.....	1	.....	3	1	1	.....	4	1
	No. 5.....	1	.....	.....	1	1	.....	.....	2	1	.....	.....	2	1
	No. 6.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.....	.....	1	.....	1	1	1	1	1	1	2	2	3	3
III.....	No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 9.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 10.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 11.....	2	1	1	.....	.....	.....	.....	2	1	1	1	3	2
	No. 12.....	1	1	.....	.....	.....	.....	.....	1	1	.....	.....	2	1
	No. 13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 14.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Grand total.....	7	3	4	2	5	4	4	3	12	7	8	20	12

REMARKS:

Amoebic Dysentery.....	1
Bacillary Dysentery.....	10
Unspecified.....	9
Cases reported among nonresident persons not included in the table.....	5
Deaths reported among nonresident persons not included in the table.....	0
Dysentery Carrier—None.....	

CHOLERA REPORTED DURING THE MONTH OF SEPTEMBER, 1923, CITY OF MANILA  
CONFIRMED CASES

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths
I.....	No. 1.....																			
	No. 2.....																			
	No. 3.....																			
	No. 4.....																			
II.....	No. 5.....																			
	No. 6.....																			
	No. 7.....																			
	No. 8.....																			
	No. 9.....																			
	No. 10.....																			
III.....	No. 11.....																			
	No. 12.....																			
	No. 13.....																			
	No. 14.....																			
Grand total.....																				

## REMARKS:

No non-resident case was reported during the month.

Cholera Carrier—4

DIPHtheria REPORTED DURING THE MONTH OF SEPTEMBER, 1928, CITY OF MANILA

499

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I...	1	1							1	1			1	1
No. 1.....														
No. 2.....	1								1				1	
No. 3.....														
No. 4.....														
No. 5.....														
No. 6.....														
No. 7.....														
No. 8.....														
No. 9.....														
No. 10.....														
No. 11.....														
No. 12.....			1								1		1	
No. 13.....														
No. 14.....														
Grand total.....	2	1	1						2	1	1		3	1

REMARKS:

Cases reported among non-resident persons not included in the table.....

Deaths reported among non-resident persons not included in the table.....

2  
0

Diphtheria Carrier—None

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF SEPTEMBER, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	27	14	3	1
Varicella.....	2	2		
Varioloid.....				
Smallpox.....				
Measles.....				
Whooping cough.....	1	1		
Influenza.....	12	3	5	1
Bubonic plague.....				
Encephalitis lethargica.....		1		1
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	166	139	70	61
Tuberculosis of other organs.....	8	8	7	6
Beriberi, infantile.....	20	21	20	21
Beriberi, adults.....		1		1

**NON-RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	38	17	1	
Varicella.....		1		
Varioloid.....				
Smallpox.....				
Measles.....				
Whooping cough.....				
Influenza.....	6	1	2	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	23	16	4	1
Tuberculosis of other organs.....				
Beriberi, infantile.....	1		1	
Beriberi, adults.....				

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF SEPTEMBER, 1928**

Sera and vaccines	On hand September 1, 1928	Received during the month	Total to be accounted for	Distrib- uted during the month	Remaining at the end of the month
Anti-diphtheric serum (tubes).....	186	200	386	124	262
Anti-dysenteric serum (ampoules).....	168	300	468	382	86
Anti-tetanic serum (units).....	75,000	1,270,000	1,345,000	550,000	795,000
Cholera vaccine (c.c.).....	2,700	90,000	92,700	72,000	20,700
Dried vaccine virus (units).....	2,900	100,000	102,900	102,400	500
Dysenteric vaccine (c. c.).....	3,770	120,000	123,770	121,260	2,510
Fresh vaccine virus (units).....	34,500	150,000	184,500	179,400	5,100
Gonococcus vaccine (ampoules).....					
Mixed typhoid-cholera vaccine (c.c.).....	57,400	150,000	207,400	198,480	8,920
Normal horse serum (ampoules).....		25	25	25	
Typhoid vaccine (c.c.).....	9,000	30,000	39,000	32,280	6,720

# REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF SEPTEMBER, 1928

501

Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated								
		Total vaccina- tions	Previously vaccinated		Under 1 year	1 to 4 years		5 years and over		Total			
			Never	Success- fully		Unsuc- cessfully	Positive	Negative	Positive		Negative	Positive	Negative
No.1.....	Tondo.....	389	342	14	33	404	7	33				444	7
	San Nicolas.....	1,286	106	1,174	6	93	4	1				94	4
	Binondo.....	102	87	15	15	65	10	2				67	10
	Santa Cruz.....	827	133	683	11	111	3	1		373	53	485	56
	Quiapo.....	80	72		8	61		11	2			72	2
No.2.....	San Miguel.....	19	18		1	19						19	
	Sampaloc.....	281	250		31	269	7	39	1	7		315	8
	Port Area.....	1	1			2						2	
	Intramuros.....	85	80		5	44	2	1				45	2
	Ermita.....	17	16		1	8	1					8	1
No.3.....	Malate.....	161	119	22	20	91	4	3		1		95	4
	Paco.....	97	73		24	76	4	1				77	4
	Pandacan.....	15	14		1	17						17	
	Santa Ana.....	49	45		4	45	1					45	1
	Total.....	3,409	1,356	1,853	160	1,305	43	92	3	388	53	1,785	99

## VACCINE VIRUS:

Remaining from last month.....	3,025 Units
Received during the month.....	6,000 do
Used during the month.....	3,500 Units
Remaining for the next month.....	5,525 do
Balance.....	9,025 Units

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF SEPTEMBER, 1928<sup>1</sup>**

Health Districts	Municipal Districts	First injection		Second injection		Total	
		V.	R.	V.	R.	V.	R.
No. 1.....	Tondo.....	1,795		1,784		3,579	
	San Nicolas.....	9				9	
	Binondo.....						
No. 2.....	Santa Cruz.....	25		23		48	
	Quiapo.....	3		3		6	
	San Miguel.....						
	Sampaloc.....	2,582		3,360		5,942	
No. 3.....	Port Area.....						
	Intramuros.....						
	Ermita.....						
	Malate.....	24				24	
	Paco.....	3,106		1,392		4,498	
	Pandacan.....						
	Santa Ana.....						
	Total.....	7,544		6,562		14,106	

V., in persons never vaccinated before; R., revaccinations.

**ANTITYPHOID AND ANTICHOLERA VACCINATIONS PERFORMED IN THE CITY OF MANILA DURING THE MONTH OF SEPTEMBER, 1928<sup>1</sup>**

Health Districts	Municipal Districts	First injection		Second injection		Third injection		Total	
		V.	R.	V.	R.	V.	R.	V.	R.
No. 1.....	Tondo.....	247	2,778	225	4,146	181	3,355	653	10,279
	San Nicolas.....	31	1,441	29	1,052	20	987	80	3,480
	Binondo.....	56	2,304	10	2,132		2,764	66	7,200
No. 2.....	Santa Cruz.....	31	810	23	1,104	16	1,492	70	3,406
	Quiapo.....	14	749	5	569	12	370	31	1,688
	San Miguel.....	36	1,058	22	1,781	21	5,836	79	8,675
	Sampaloc.....	133	4,315	165	3,457	134	2,853	432	10,625
No. 3.....	Port Area.....								
	Intramuros.....	5	1,870		1,536		1,253	5	4,659
	Ermita.....		1,122		1,219		809		3,150
	Malate.....		573		486		419		1,478
	Paco.....		441		2,052		2,069		4,562
	Pandacan.....								
	Santa Ana.....								
	Total.....	553	17,461	479	19,534	384	22,207	1,416	59,202

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections. Typhoid and paratyphoid vaccine used for the third injections.  
V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	10,587	1,683	3,040	5,864
Agusan.....	6,130	1,814	1,499	2,817
Albay.....	38,249	8,719	11,458	18,072
Antique.....	17,605	5,266	7,650	4,689
Bataan.....	9,953	3,955	1,669	4,329
Batanes.....	1,780	160	900	726
Batangas.....	47,300	13,515	12,972	20,813
Bohol.....	44,804	13,145	13,619	18,040
Bukidnon.....	6,407	2,375	1,030	3,002
Bulacan.....	36,555	11,622	14,140	10,793
Cagayan.....	83,948	14,950	56,827	12,171
Camarines Norte.....	6,531	2,059	1,769	2,703
Camarines Sur.....	17,859	4,611	3,759	9,489
Capiz.....	41,125	10,947	16,260	13,918
Catanduanes.....	27,673	3,286	10,623	13,764
Cavite.....	123,688	8,023	105,234	10,431
Cebu.....	115,287	30,182	21,292	63,813
Cotabato.....	17,440	5,719	5,069	6,652
Davao.....	27,671	9,881	10,264	7,526
Ilocos Norte.....	111,192	6,513	84,374	20,305
Ilocos Sur.....	22,942	6,032	4,589	12,321
Iloilo.....	124,494	37,720	61,666	25,108
Isabela.....	15,934	3,733	2,992	9,209
Laguna.....	105,072	10,323	80,432	14,317
Lanao.....	15,535	4,914	6,997	3,624
La Union.....	22,211	4,689	410	17,112
Leyte.....	122,472	38,980	42,051	41,441
Marinduque.....	8,788	1,803	4,461	2,524
Masbate.....	48,071	6,011	30,453	11,607
Mindoro.....	6,702	1,605	1,419	3,678
Misamis.....	30,648	10,693	2,412	17,543
Mountain Province.....	37,448	12,313	12,090	13,045
Nueva Ecija.....	36,365	12,163	5,085	19,117
Nueva Viacaya.....	5,739	1,315	824	3,600
Occidental Negros.....	80,738	25,075	36,399	19,264
Oriental Negros.....	41,422	14,325	10,448	16,649
Palawan.....	3,079	731	1,036	1,312
Pampanga.....	24,752	10,167	1,507	13,078
Pangasinan.....	76,288	21,242	17,772	37,274
Rizal.....	26,901	7,393	13,491	6,017
Romblon.....	8,594	2,119	2,715	3,760
Samar.....	57,142	12,402	16,059	28,681
Sorsogon.....	48,458	9,521	18,873	20,064
Sulu.....	21,270	8,806	5,863	6,601
Surigao.....	9,416	2,732	1,755	4,929
Tarlac.....	23,215	5,342	13,334	4,539
Tayabas.....	30,986	11,654	4,996	14,336
Zambales.....	7,892	2,340	1,048	4,504
Zamboanga.....	14,178	5,685	1,622	6,871
Total.....	1,868,542	450,253	786,247	632,042

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by Vaccinating Parties are included in the above table.

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	915	436	1,825	1,283	1,729	3,101	4,469	4,825
Agusan.....	299	203	489	633	932	713	1,720	1,549
Albay.....	4,505	1,843	4,437	1,554	5,842	4,890	14,784	8,287
Antique.....	1,698	529	2,272	1,070	2,148	2,306	6,118	3,905
Bataan.....	2,366	411	2,707	995	1,274	653	6,347	2,059
Batanes.....	108	77	219	177	596	452	923	706
Batangas.....	6,667	1,667	9,138	4,032	8,659	8,316	24,464	14,015
Bohol.....	4,209	1,862	6,525	3,584	11,300	10,237	22,034	15,683
Bukidnon.....	201	134	497	500	1,328	1,769	2,026	2,403
Bulacan.....	7,325	1,725	6,708	3,062	6,600	5,501	20,633	10,288
Cagayan.....	4,895	1,257	7,572	2,665	20,400	23,502	32,867	27,424
Camarines Norte.....	1,104	305	1,999	557	1,062	511	4,165	1,373
Camarines Sur.....	2,382	1,144	3,365	1,522	4,567	2,759	10,314	5,425
Capiz.....	3,549	874	4,794	1,903	12,933	6,758	21,276	9,535
Catanduanes.....	2,191	1,069	3,078	1,351	5,617	4,874	10,886	7,294
Cavite.....	4,945	2,232	8,137	5,587	36,163	39,189	49,245	47,008
Cebu.....	10,479	4,926	11,470	5,944	14,400	19,443	36,349	30,313
Cotabato.....	681	331	1,371	802	3,821	2,337	5,873	3,470
Davao.....	980	390	2,391	1,218	7,196	5,728	10,567	7,336
Ilocos Norte.....	4,377	1,705	12,051	5,857	35,609	38,086	52,037	45,648
Ilocos Sur.....	2,566	1,210	4,156	2,062	4,370	3,865	11,092	7,137
Iloilo.....	8,526	2,289	15,896	5,674	29,826	32,807	54,248	40,770
Isabela.....	2,118	672	2,828	956	3,866	2,126	8,812	3,754
Laguna.....	3,302	3,083	5,151	4,577	18,203	32,303	26,656	39,963
Lanao.....	739	396	1,111	919	2,084	2,720	3,934	4,035
La Union.....	2,811	1,275	3,932	3,440	2,841	4,526	9,584	9,241
Leyte.....	5,310	1,452	16,931	4,217	30,700	20,652	52,941	26,321
Marinduque.....	813	282	474	197	1,380	2,705	2,667	3,184
Masbate.....	1,443	269	4,387	1,073	16,089	8,010	21,919	9,352
Mindoro.....	564	198	836	472	1,292	1,221	2,692	1,891
Misamis.....	2,264	933	3,612	1,528	5,571	3,539	11,447	6,000
Mountain Province.....	566	204	2,143	1,187	7,748	5,761	10,457	7,152
Nueva Ecija.....	5,055	2,190	7,871	3,614	5,999	6,538	18,925	12,342
Nueva Vizcaya.....	720	373	514	631	1,079	1,930	2,313	2,934
Ocidental Negros.....	5,440	1,331	10,033	3,302	16,087	16,217	31,560	20,850
Oriental Negros.....	5,553	1,621	6,352	2,728	7,805	5,041	19,710	9,390
Palawan.....	39	45	160	105	902	858	1,101	1,008
Pampanga.....	3,253	1,774	2,509	1,395	772	961	6,534	4,130
Pangasinan.....	11,296	3,142	13,133	4,391	15,331	14,890	39,760	22,423
Rizal.....	3,600	1,890	1,584	1,564	3,566	5,545	8,750	8,999
Romblon.....	1,070	415	1,541	472	2,396	1,494	5,007	2,381
Samar.....	2,228	1,171	4,249	2,937	9,388	8,034	15,865	12,142
Sorsogon.....	2,355	892	5,387	1,678	16,424	8,331	24,166	10,901
Sulu.....	942	447	3,059	1,664	3,055	4,091	7,056	6,202
Surigao.....	621	224	1,131	543	2,713	2,100	4,465	2,867
Tarlac.....	1,744	980	3,301	2,267	3,337	5,809	8,382	9,056
Tayabas.....	4,700	2,519	6,299	2,842	7,178	6,142	18,177	11,503
Zambales.....	719	587	865	1,290	1,196	1,701	2,780	3,578
Zamboanga.....	764	548	1,889	1,423	2,405	2,602	5,058	4,573
<b>Total.....</b>	<b>144,997</b>	<b>55,532</b>	<b>222,379</b>	<b>103,449</b>	<b>405,779</b>	<b>393,644</b>	<b>773,155</b>	<b>552,625</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by Vaccinating Parties are included in the above table.



**CONSOLIDATED REPORT OF VACCINATION WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Total
Abra.....	6,036	5,113	11,149
Agusan.....	2,826	1,251	4,077
Albay.....	1,719	226	1,945
Bataan.....	29		29
Bohol.....	1,703	1,056	2,759
Bukidnon.....	1,605	557	2,162
Bulacan.....	2,274	1,056	3,330
Cagayan.....	4,330	2,705	7,035
Camarines Norte.....	425	396	821
Camarines Sur.....	5,565	1,967	7,532
Capiz.....	20,812	14,166	34,978
Catanduanes.....	3,701	2,035	5,736
Cebu.....	10,368	6,153	16,521
Iloilo.....	34,971	19,589	54,560
Isabela.....	3,038	2,239	5,277
Laguna.....	8,064	5,956	14,020
La Union.....	25,581	20,392	45,973
Masbate.....	884	212	1,096
Mindoro.....	669	835	1,004
Misamis.....	771	225	996
Mountain Province.....	3,147	1,417	4,564
Nueva Vizcaya.....	42	15	57
Occidental Negros.....	3,498	1,945	5,443
Oriental Negros.....	437	308	745
Palawan.....	91	81	172
Pampanga.....	3,593	1,104	4,697
Pangasinan.....	23,889	18,678	42,567
Rizal.....	5,517	1,809	7,326
Romblon.....	4,708	4,318	9,026
Samar.....	910	7	917
Surigao.....	70	54	124
Tarlac.....	5,679	2,230	7,909
Tayabas.....	5,076	2,856	7,932
Zambales.....	1,209	566	1,776
Total.....	193,237	121,017	314,254

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Thrd injections	Total
Agusan.....	354	118		472
Albay.....	15,436	5,894	275	21,605
Antique.....	2,057	1,217		3,274
Bataan.....	4,724	317		5,041
Batangas.....	1,942	542		2,484
Bulacan.....	109,335	807		110,142
Cagayan.....	3,494	485		3,979
Camarines Sur.....	16,408	524		16,932
Capiz.....	298	226		524
Catanduanes.....	542	306		848
Cebu.....	394	338	50	782
Iloilo.....	222	85		307
Isabela.....	240	322		562
Laguna.....	1,478	507	5	1,990
Leyte.....	2,122	796		2,918
Mindoro.....	391			391
Nueva Ecija.....	285	99		384
Oriental Negros.....	100	35		135
Pampanga.....	1,374			1,374
Pangasinan.....	4,632	3,553		8,185
Rizal.....	140,244	15,539	5	155,788
Romblon.....	1,149	209		1,358
Samar.....	2,311	673	106	3,090
Sorsogon.....	10,757	522		11,279
Tarlac.....	1,998	736		2,734
Total.....	322,287	33,850	441	356,578

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Albay.....	350	233	107	690
Bataan.....	51	51	51	153
Batangas.....	57	41	.....	98
Bukidnon.....	157	82	31	270
Bulacan.....	4,886	2,917	1,444	9,247
Camarines Sur.....	2,944	278	12	3,234
Iloilo.....	.....	120	.....	120
Laguna.....	6,091	3,733	1,332	11,156
Mindoro.....	340	30	.....	370
Mountain Province.....	82	.....	.....	82
Pampanga.....	6	6	.....	12
Pangasinan.....	1,678	1,105	53	2,836
Rizal.....	2,538	953	205	3,696
Romblon.....	300	300	.....	600
Sorsogon.....	333	89	9	431
Tarlac.....	2,075	506	3	2,584
<b>Total.....</b>	<b>21,888</b>	<b>10,444</b>	<b>3,247</b>	<b>35,579</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND  
CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injections	Second injections	Third injections	Total
Abra.....	2,579	1,938	.....	4,517
Agusan.....	3,265	1,944	.....	5,209
Antique.....	2,799	1,503	.....	4,302
Bataan.....	14,460	9,902	.....	24,362
Batanes.....	627	585	.....	1,212
Batangas.....	2,887	2,036	.....	4,923
Bohol.....	4,382	3,277	.....	7,659
Bukidnon.....	567	585	49	1,201
Bulacan.....	45	27	.....	72
Cagayan.....	10,376	6,215	.....	16,591
Camarines Norte.....	8,034	6,702	.....	14,736
Camarines Sur.....	2,545	549	.....	3,094
Capiz.....	3,195	1,417	78	4,690
Cavite.....	75,521	65,740	.....	141,261
Cebu.....	27,227	8,372	495	36,094
Cotabato.....	493	.....	.....	493
Davao.....	2,215	1,181	.....	3,396
Ilocos Norte.....	6,719	2,882	692	10,293
Ilocos Sur.....	3,869	2,901	46	6,816
Iloilo.....	23,454	6,070	.....	29,524
Isabela.....	2,916	1,382	.....	4,298
Laguna.....	3,834	3,107	1,877	8,818
Lanao.....	12,726	5,645	.....	18,371
La Union.....	9,226	6,338	.....	15,564
Leyte.....	5,851	1,705	.....	7,556
Marinduque.....	5,920	3,316	.....	9,236
Masbate.....	1,387	261	.....	1,648
Mindoro.....	2,159	1,032	.....	3,191
Misamis.....	5,689	1,597	46	7,332
Mountain Province.....	2,538	764	578	3,880
Nueva Ecija.....	5,128	3,827	.....	8,955
Nueva Vizcaya.....	1,090	980	.....	2,070
Occidental Negros.....	11,245	5,233	69	16,547
Oriental Negros.....	6,913	3,164	.....	10,077
Palawan.....	59	59	.....	118
Pampanga.....	176,174	8,318	.....	184,492
Pangasinan.....	13,190	8,970	.....	22,160
Rizal.....	2,949	1,672	.....	4,621
Samar.....	7,138	2,737	259	10,134
Sulu.....	30	.....	.....	30
Tarlac.....	3,326	2,111	.....	5,437
Tayabas.....	21,144	10,936	.....	32,080
Zambales.....	8,574	5,625	.....	14,199
Zamboanga.....	9,933	2,790	.....	12,723
<b>Total.....</b>	<b>514,398</b>	<b>205,395</b>	<b>4,189</b>	<b>723,982</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF SEPTEMBER, 1928**

Provinces and towns	Cases	Deaths
Capiz:		
Calivo.....	2	0
Total.....	2	0

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH  
OF SEPTEMBER, 1928**

No case and no death reported during the month.

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF SEPTEMBER, 1928**

Sanitary orders	Health districts			
	No. 1 Meisic	No. 2 Sampaloc	No. 3 Paco	Total
<b>Orders pending, September 1, 1928:</b>				
Minor.....	133	103	258	494
Sewer.....	25	52	3	80
Vacating.....	8	9	.....	17
Filling.....	26	44	24	94
<b>Total.....</b>	<b>192</b>	<b>208</b>	<b>285</b>	<b>685</b>
<b>Orders issued during the month:</b>				
Minor.....	6	6	23	35
Sewer.....	1	.....	1	2
Vacating.....	.....	.....	.....	.....
Filling.....	.....	2	1	3
<b>Total.....</b>	<b>7</b>	<b>8</b>	<b>25</b>	<b>40</b>
<b>Orders completed during the month:</b>				
Minor.....	7	8	6	21
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>7</b>	<b>8</b>	<b>6</b>	<b>21</b>
<b>Orders cancelled during the month:</b>				
Minor.....	.....	.....	.....	.....
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>
<b>Orders pending, September 30, 1928:</b>				
Minor.....	132	161	275	568
Sewer.....	26	52	4	82
Vacating.....	8	9	.....	17
Filling.....	26	46	25	97
<b>Total.....</b>	<b>192</b>	<b>208</b>	<b>304</b>	<b>704</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	44	55	40	139
<b>Permits for minor building constructions:</b>				
Approved.....	43	49	20	112
Disapproved.....	13	9	11	33
<b>New buildings completed.....</b>	<b>27</b>	<b>26</b>	<b>23</b>	<b>76</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	30	58	12	100
Disapproved.....	25	12	4	41
<b>Prosecutions:</b>				
Convictions.....	1	.....	.....	1
Dismissals.....	1	2	.....	6
Amount of fines.....	P 10.00	.....	.....	P 10.00
<b>Plumbing permits issued.....</b>	<b>56</b>	<b>68</b>	<b>40</b>	<b>164</b>
<b>Plumbing projects completed.....</b>	<b>61</b>	<b>69</b>	<b>52</b>	<b>182</b>
<b>Premises connected to the sanitary sewer to August 31, 1928.</b>	<b>2,568</b>	<b>4,410</b>	<b>800</b>	<b>7,778</b>
<b>Connected during the month.....</b>	<b>4</b>	<b>4</b>	<b>9</b>	<b>17</b>
<b>Total.....</b>	<b>2,572</b>	<b>4,414</b>	<b>809</b>	<b>7,795</b>

**NOTE.**—Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

OCTOBER, 1928

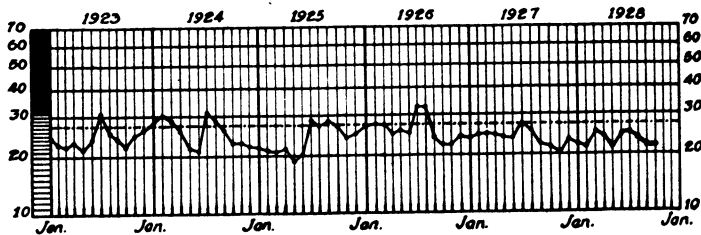
No. 10

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY of MANILA*



-----Average death rate for the last five years.

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*

LEONCIO LOPEZ-RIZAL, M.D., *Member*

EUSEBIO D. AGUILAR, M.D., *Member*

TEOFILO CORPUS, M.D., *Member*

REGINO G. PADUA, M.D., *Member and Secretary*

---

## TABLE OF CONTENTS

	Page
In Memoriam, Dr. Salvador Vivencio del Rosario, by Jose P. Bantug..	511
Report of the Committee on Beriberi.....	514
Malaria Surveys and Controls in Mindanao and Sulu.....	537
Miscellaneous .....	589
General Statistics .....	591

**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**VOL. VIII**

**OCTOBER, 1928**

**No. 10**

**IN MEMORIAM**

---

**Dr. SALVADOR VIVENCIO DEL ROSARIO**

**By JOSE P. BANTUG, M.D.**

Dr. Salvador Vivencio del Rosario has passed unexpectedly at 6 p. m., October 29th, to the great beyond. He was over 64 years of age at the time of his death, and his passing removes from our midst one from the thinning ranks, who, in the full development of their intellectual powers, have witnessed successively the three most important epochs in the nation's history; the closing years of Spanish rule, the brief but brilliant government of the Filipino Republic, and the present American occupation, witnessing the successive but progressive steps towards an autonomous government and the inauguration of that era of economic development which should bring us up to the level of the other progressive nations of the world.

The scion of an illustrious family, who counts among its members, a noted jurist, a brilliant chemist, a pious priest, and a humble nun, he shed more luster to the already distinguished scutcheon of his ancestors.

At a time when the Filipinos in superior command could be counted with the fingers of one's hand, his father was made an Alcalde Mayor of one of the richest provinces of Luzon, and later appointed as Associate Justice of the Supreme Court of Porto Rico and upon declining the post, became Secretary of the Royal Audiencia of Manila. His own schooling was not neglected, having attended the San Juan de Letran College from

which he transferred to the University of Santo Tomas, where in 1886 he obtained the degree of Licentiate of Medicine and Surgery. Then, as was customary among Filipinos of means at the time, he was sent to the Central University at Madrid from which he was graduated as Doctor of Medicine upon presenting an original thesis on Beriberi. While in Madrid in the early 90's he had the opportunity to meet Rizal and other patriots who were working for reforms for the home country. Together in that memorable year, they celebrated Christmas Day. And upon his return to the Philippines he had taken an active part in the earsthwhile Philippine Republic. He was appointed a Representative from Albay in the Malolos Congress and was a member of the Board of Medical Examiners of the Government University, the *Universidad Literaria* at Malolos.

His literary learnings were manifested early, and General Luna upon founding his paper, *La Independencia*, selected Doctor Del Rosario as his editor-in-chief. His literary contributions to this paper attracted so much attention that when the *La Unión* and the *La Democracia* were founded, he was invited to become a member of the staff. In politics he was identified with the Federalists, having become its Secretary, but forsook politics soon after to dedicate his whole time to his chosen profession.

Early in the present régime, he offered his services to the American Government, and on September 9, 1898, was made a municipal physician, with several others, in the City of Manila. In 1903, with Doctor Abella, he passed the medical inspector examination, the first Filipino to successfully pass it, until then a sort of forbidden fruit for us. In 1915, he was made acting chief of the Division of Sanitation, City of Manila, to which position he was later confirmed. In 1921, he was made Assistant Director of Health, when Doctor Vicente de Jesus assumed the directorship of the Bureau. While still connected with the old Bureau of Health, Doctor Del Rosario was made head of the School of Public Health of the University of the Philippines.

In his long career as a public servant, Doctor Del Rosario has held special appointments within the Bureau of Health, having served on various committees and acted several times as Director of Health in the absence of the incumbent.

Doctor Del Rosario was a very deep student of public health and he always kept himself abreast of the progress of the science by the acquisition of an up-to-date scientific library, and those



of us who have been long associated with him can very well remember with pride, how, when desiring to seek references on any given subject, he could always lay his fingers, not only on the right book, but also on the precise chapters. His passing has left an indelible mark in the progress of public health in the Philippines, and those who have been privileged to study under him will remember that he always went to the classroom fully prepared with up-to-date notes on the subject he was to discuss. Doctor Del Rosario was coauthor with Doctors Gomez and Ruiz of the proposed Provincial Sanitary Code, and translated into Spanish Dr. Carroll Fox's Sanitary Inspectors' Handbook. His contributions to the medical literature besides those enumerated, are note-worthy, and as early as 1916, he was the first to enunciate the proposition that non-agglutinating vibriosis play a significant rôle in cholera epidemics, which years later, and after a most painstaking investigation, put forth his conclusions before one of the sessions of the Biennial Congress of the Far Eastern Association of Tropical Medicine. In 1920 and 1921, he was made Vice President for the Philippines of the Congress, with Doctor Lopez-Rizal as secretary. When in 1924 he sought and was granted retirement after twenty-six years devoted to the public service, he retired to private life in the consciousness that he had served his country well. May his grieving family have enough of that Christian fortitude that survives all misfortunes and find relief in the thought that Doctor Salvador Vivencio del Rosario had led a well spent life in the service of his country and was a factor in its progress.

# REPORT OF THE COMMITTEE ON BERIBERI

## I. INTRODUCTION

Following the recommendation of the Far Eastern Association of Tropical Medicine in its resolution approved at its last Congress held at Tokyo, a committee to continue the investigation on beriberi has been appointed by the Honorable, the Secretary of Public Instruction. An appropriation of ₱5,100 has been approved for investigation and propaganda work, the International Health Board contributing with ₱100.

The Committee was appointed on October 18, 1926, and held eight meetings up to the present time for the discussions of the different aspects of the problem.

The Committee is composed of the following: Dr. Fernando Calderon, Colonel Edward B. Vedder, Major A. Parker Hitchens, Dr. Luis Guerrero, Dr. Liborio Gomez, Dr. Jose Fabella, Mr. A. H. Wells, Dr. Isabelo Concepcion, Dr. Jose Albert, and Professor F. O. Santos, members and Dr. Lopez-Rizal chairman.

## II. PRESENT SITUATION OF BERIBERI IN THE ISLANDS

No change has been noted in the situation of beriberi in the Islands since the last report was submitted two years ago, although to a slight degree, the same tendency to increase in the provinces and to decrease in the city has been noted for the last two years as shown in the following table:

*Mortality from beriberi in the Philippines*

Year	Manila	Provinces <sup>1</sup>	Total
1910.....	1,441	4,128	5,569
1911.....	1,331	4,367	5,698
1912.....	1,056	4,372	5,428
1913.....	696	3,194	3,890
1914.....	838	4,102	4,940
1915.....	872	4,336	5,208
1916.....	684	5,874	6,558
1917.....	490	7,463	7,952
1918.....	731	11,866	12,597
1919.....	406	11,981	12,387
1920.....	555	12,481	13,036
1921.....	705	15,311	16,016
1922.....	648	16,241	16,889
1923.....	698	17,417	18,115
1924.....	600	18,331	18,931
1925.....	587	17,944	18,531
1926.....	526	18,678	19,204

<sup>1</sup> Including deaths registered in Manila among nonresidents.

No great variation has been noted as regards the distribution of the disease in the provinces compared with that reported in previously, while in some provinces there was an increase, a decrease could be shown in others. An analysis of the facts, that might have contributed to this phenomenon, failed to show any other important factor than that errors may have possibly been made in the diagnosis, knowing that the death certificates and the diagnosis of causes of death stated therein, are usually prepared by laymen.

Judging from the death returns, beriberi is the third in the list of the more important causes of death in the Philippines, and contributes to our general mortality in about 8 per cent of the total mortality. Ninety one per cent of the total deaths from beriberi occurs as infantile beriberi (deaths among infants under one year).

There are annually an average of 16,500 deaths, in round numbers, ascribed to infantile beriberi, which represents 28.10 per cent of the total deaths under one year of age, and 43.24 per thousand deaths.

Beriberi prevails during the months of October, November, December, and January.

The disease is widely distributed in the Philippines, showing, however, a great variation in the range of mortality in the different provinces, according to the mortality statistics compiled. The provinces of Central Luzon such as Cavite, Nueva Ecija, Bataan, Rizal, Laguna, Batangas, Tarlac, Bulacan and the Islands of Mindoro and Marinduque contribute with the highest rates of mortality (from 20 to 51 per 10,000 population).

### III. RICE

It is still generally admitted that where rice forms the staple of diet beriberi prevails.

At the last meeting (Tokyo, 1925) of the Far Eastern Association of Tropical Medicine resolutions were approved to the effect, that, the governments concerned, should encourage research towards developing a practical test to distinguish rices that may cause or prevent beriberi, and that, facts be collected which may be used in classifying rice in the different stages in the process of milling. The committee is fortunate in having amongst its members Col. Edward B. Vedder, chairman of the United States Army Medical Research Board in the Philippines,

well known for his previous works and investigations on beriberi in the Islands, who, has willingly undertaken the task of performing the investigation of this aspect of the problems. After about two years work, he submitted a lengthy report which, for the sake of brevity, only parts of it will be quoted throughout this report.

*Importation and production of rice in the Philippines.*—From tables prepared by the previous Beriberi Committee, supplemented by data furnished by the Bureaus of Agriculture and Customs, we have been able to compile the amount of rice imported and produced in the Philippines. The table below shows in kilograms the amount of importation and production of rice:

*Importation and Production of rice in the Philippines*

Year	Total rice in kilograms	Total rice produced	Total rice imported	Percent-age
1910.....	734,373,039	537,046,819	197,326,220	26.87
1911.....	768,306,581	584,631,873	183,674,708	23.91
1912.....	632,046,764	330,989,488	301,057,376	47.63
1913.....	784,639,153	697,649,598	86,989,555	11.09
1914.....	744,393,683	647,472,186	96,921,497	13.02
1915.....	725,855,541	507,413,996	218,441,545	30.09
1916.....	784,266,803	594,431,226	189,835,577	24.21
1917.....	949,567,722	802,582,007	146,985,715	15.48
1918.....	1,203,060,655	1,019,329,124	183,731,531	15.27
1919.....	1,012,812,736	961,993,978	50,818,758	5.02
1920.....	1,126,731,722	1,049,397,370	77,334,352	6.86
1921.....	1,256,176,224	1,197,658,507	58,517,717	4.66
1922.....	1,279,237,709	1,236,942,841	42,294,868	3.31
1923.....	1,339,292,905	1,272,843,866	66,449,039	5.36
1924.....	1,720,333,893	1,569,225,100	151,108,793	8.78
1925.....	1,824,509,923	1,723,311,006	101,198,917	5.55
1926.....	1,874,099,814	1,803,615,894	70,483,920	3.77

Our production of rice is steadily increasing. Notwithstanding this fact, the importation which ought to have decreased, had, during the last three years, relatively increased in proportion to production. However, comparison of beriberi mortality and increased rice importation does not show any noticeable correlation.

*Varieties of rice and rice mills.*—In the investigations performed by the previous committee, the correlation of the different varieties of rice and the presence of modern rice mills, in each particular locality, has been studied. The conclusion arrived at, from the studies made, was, that, no correlation exists between the number and presence of rice mills in any locality, and that no significant correlation is there between the different varieties of rice and between beriberi mortality taken from the death returns. If any correlation was noted, it was due to the degree of polishing, the proportion of  $P_2O_5$  content,

the degree of unpolishing, etc., rather than the difference in variety.

*Standardization of rice.*—This part of the work of the committee has been totally undertaken by the member of the committee, Colonel Vedder, with the coöperation of Mr. R. T. Feliciano, chemist of the Bureau of Science.

"In the Philippines, for a good proportion of rice a 0.5 per cent  $P_2O_5$  content may probably be regarded as a fair standard for rice." The above was a statement copied from the report of the previous Committee on Beriberi. It is realized that the standard, as it was found, if it has any significance, is only local and perhaps not applicable to other countries. It is further known to all the difficulties of applying this standard as it is not always dependable due to the practice of some rice dealers in the Philippines to mix rice polishing with the sample submitted for examination, thus increasing to some extent the  $P_2O_5$  content.

*Degree of unpolishing.*—As an indirect method in determining the vitamin content of rice, and see whether this factor (degree of unpolishing) may be taken as an index for the standardization of rice, the previous committee has (by microscopic method) determined the degree of unpolishing (the method described in previous report). After determining the degree of unpolishing (portion of pericarp left after milling), it was found out that the results do not show exact parallelism with the  $P_2O_5$  content, and because the committee did not have proper facilities to actually determine the correlation between this factor and beriberi, it was recommended that the investigations on the standardization of rice be continued.

Fortunately for the present committee, at the time of its creation, Colonel Vedder, of its own accord as chairman of the United States Army Medical Research Board, had already started to work on this aspect of the problem, the results of which was made available for the preparation of this report.

Two hundred different samples of rice grown in different localities and of all degrees of milling were subjected to a series of studies by (1) determining the percentage of the external layer of the grain still adhering to them (degree of polishing), (2) examining them chemically, and (3) determining their beriberi producing potentialities by actual feeding to pigeons.

To determine the percentage of the external layer left in the grain, instead of using the microscopic method employed by the last committee, Cram's iodine staining method was used. One significant fact noted from the results obtained is, that, out of 200 samples, 7 showed 0 per cent of pericarp remaining and these were among the choice and overmilled rices from Pampanga (3), Nueva Ecija (1) and Hongkong (3 glutinous which is not commonly used except for cakes, sweatmeats, etc.).

0 .....	7
0-5 .....	8
6-10 .....	30
11-15 .....	9
16-20 .....	9
21-25 .....	7
26-30 .....	5
31-35 .....	4
36-40 .....	5
41-45 .....	5
46-50 .....	6
51-55 .....	2
56-60 .....	3
61-65 .....	2
66-70 .....	4
71-75 .....	7
76-80 .....	13
81-85 .....	11
86-90 .....	40
91-95 .....	22
96-100 .....	11

and that when native rice is found pounded or undermilled, a large proportion of them contain not less than 75 per cent of pericarp remaining. These results will be further discussed in connection with its relation to beriberi. It should be taken into consideration that the method can not be taken as an exact measure of the remaining pericarp for rices having less than 50 per cent of their external layers. An error of at least 10 per cent should be taken into account. However, for rices with the external layer practically intact and for these completely deprived of it, more accurate results are obtained.

*Chemical analysis.*—Chemical analysis of the total 200 samples were made for the determination of moisture, fat,  $P_2O_5$ , ash, nitrogen, and amido nitrogen.

All results were calculated on the original weight of the rice, rather than the dry weight, because this is the method in gen-

eral use in determining the  $P_2O_5$  content of rices submitted for routine analysis, since rice is not sold or consumed by dry weight. However, the percentages by dry weight were calculated for a considerable number of the rices, in the hope, that, this method which is more accurate would reduce the number of rices producing irregular results. It was found that there was no significant difference in the ultimate results, whether calculations were made on original weight, or dry weight.

*Feeding experiments.*—To determine the beriberi producing potentiality of the different varieties of rices under various degrees of milling, feeding experiments in pigeons were performed (about 900 pigeons were used). Pigeons were selected for feeding, because, they are even more susceptible to polyneuritis than fowls, and are readily handled. Four pigeons were fed upon each sample of rice, allowing them all that they would eat. No other food was given, except water, which is provided abundantly in each cage. The pigeons were observed every day, and the date of the first symptoms of polyneuritis, as well as other subsequent paralysis, are carefully noted down and recorded. When the birds are on the point of death, they were treated by administering small amounts of rice polishing (tikitiki) or an extract of the same. Prompt recovery almost invariably followed, which thus confirmed the previous diagnosis of polyneuritis. When death occurred in cases of doubtful diagnosis, autopsies were made to determine the cause of death, making a careful examination of the sciatic nerves for the existence of nervous degeneration. "In any case in which the results of the feeding experiment could be considered doubtful, because of loss of birds from intercurrent disease or for other reasons, the experiments on that rice was repeated with a new group of birds."

*Beriberi producing factor.*—Colonel Vedder has worked out a coefficient that may express the beriberi producing power of a given rice, which he called "beriberi producing factor." In estimating this coefficient two factors were considered; viz, the number of individuals (pigeons) that develop the disease and the rapidity of development of the disease. The percentage of the former to total number of pigeons used in the experiment divided by the average number of days elapsing from the time the rice was first fed until the first symptoms of polyneuritis appeared will represent the coefficient, thus, the higher the per-

centage of the birds that develop polyneuritis and the shorter the depletion period the greater the coefficient will be.

The first symptoms of polyneuritis occasionally appeared as early as fifteen days after feeding. In cases that none of the birds developed the disease after 100 days of feeding, it was assumed that the rice afforded sufficient protection and the experiment was discontinued. Since the pigeons are more susceptible to polyneuritis than men "it may reasonably be claimed that any rice that protects pigeons for 100 days will prevent the appearance of beriberi in man even when used as an exclusive diet, which is seldom the case."

*Results of investigation and staining of remaining pericarp.*—Out of the 200 samples of rice examined, 115 or 57.50 per cent of the total showed a percentage of over 50 remaining pericarp, while 85 or 42.50 per cent showed 50 or less than 50 per cent pericarp remaining. In comparing these percentages obtained with the beriberi produced, and the beriberi factor, it is shown that no rice having 50 per cent or more pericarp remaining produced polyneuritis in pigeons; at the same time, it may be noted that 17 other samples having less than 50 per cent external layers of the grain protected against the disease as follows: 1 sample of rice out of 15 having only 10 per cent; 5 rices out of 17 having 20 per cent; 2 rices out of 5 having 25 per cent; 3 rices out of 5 having 30 per cent; 2 rices out of 3 having 35 per cent; 3 rices out of 4 having 40 per cent; and 4 rices out of 5 having 45 per cent. As an index to show whether a rice is beriberi producing or beriberi preventing, the percentage of pericarp remaining is comparatively better one than either ash, fat or  $P_2O_5$ .

On the other hand, experiments performed seemed to suggest the possibility that all the vitamin content is not always exclusively contained in the external layers of the rice and that the most highly milled contain traces of vitamin, because of the fact that pigeons fed on a synthetic diet, composed of corn starch 90 per cent, egg albumen 8 per cent, salt mixture 1 per cent, and cod liver oil 1 per cent, developed polyneuritis much faster than when fed on the most highly milled rice.

Only undermilled rice was used in the diet of the Philippine Scouts since 1910, followed by the complete disappearance of beriberi from the sick list among them. Seven samples used in this series of 200 examinations were secured from rices furnished the Philippine Scouts. Out of these 7 samples, only one



had as low as 88 per cent pericarp and the remaining 6 samples ranged from 92—98 per cent. The remarkable success in the prevention of beriberi among the scouts was undoubtedly due to the method used in selecting rice for their diet. This method is, therefore, to be recommended as the best and simplest one for use in armies and institutions, although, unfortunately, it can not be recommended as a legal standard for the obvious reason that the individual factor cannot entirely be eliminated in the appreciation and grading of rice samples submitted.

Although 50 per cent of the pericarp in any of the 200 samples proved to be a protection against polyneuritis in pigeons, which are comparatively more susceptible to the disease than man, we feel that it needs to be determined further, whether lower than 50 per cent remaining pericarp in the rice grain would afford practical protection in man, taking into consideration that the method of preparation and cooking of rice among the natives in the Islands reduces to a certain degree the  $P_2O_5$ , which is chiefly contained in the external layers.

*Ash as an index.*—The findings showed that polyneuritis occurred with any rice having at least 1.05 per cent of ash. If it is true that this percentage (1.05) excludes all rices producing polyneuritis, it also excludes 59 rices or 29.5 per cent of the samples that afforded complete protection, as follows:

0.61 .....	1	0.82 .....	2	0.93 .....	1
0.67 .....	1	0.83 .....	2	0.94 .....	3
0.69 .....	1	0.85 .....	2	0.95 .....	4
0.72 .....	1	0.86 .....	3	0.96 .....	2
0.74 .....	2	0.87 .....	3	0.97 .....	1
0.75 .....	1	0.88 .....	3	1.00 .....	1
0.78 .....	1	0.89 .....	1	1.01 .....	2
0.79 .....	2	0.90 .....	1	1.02 .....	3
0.80 .....	4	0.91 .....	1	1.03 .....	3
0.81 .....	1	0.92 .....	2	1.04 .....	4

As an index, the ash is, therefore, less acceptable than the percentage of remaining pericarp, and it is further to be found out whether the percentage of 1.05 is the safest limit which would apply to rices grown in other countries. Among the 200 samples submitted to chemical examination, 10 samples were received from Java and *hand pounded* in Manila. Out of these 10 samples, only 3 showed 1.05 per cent of ash or over, while 7 or 70 per cent gave ash percentage ranging from 0.67 to 0.92. Notwithstanding this fact, all the samples proved to be beriberi-

preventing rices. The relation between the beriberi factor and the percentage of ash is given in the following table:

*Table showing the relation between beriberi factor and percentage of ash*

Percentage of ash	Beriberi factor									Total
	0	0.01-0.50	0.51-1.00	1.01-1.50	1.51-2.00	2.01-2.50	2.51-3.00	3.01-3.50	3.51-4.00	
0-0.24.....										
0.2-50.49.....	1					1		1	2	5
0.5- 0.74.....	5	1	5	3	7	3	5	2	1	32
0.75-0.99.....	41	4	1	10	6	1	1			64
1.00-1.24.....	57	1	1							59
1.25-1.49.....	37									37
1.50-1.99.....	3									3
Total.....	144	6	7	13	13	5	6	3	3	200

*Phosphorous pentoxide.*—The  $P_2O_5$  standard is better than the ash, but is not nearly as good as the fat standard. Out of 200 samples examined for  $P_2O_5$  content, 21 or 10.5 per cent was found to contain lower than the old 0.45 proposed standard for beriberi-preventing rice and 179 or 89.5 per cent had the limit (0.45) or more. In comparing these findings with the results of feeding experiments, it was found out that the old standard of 0.4 per cent is too low to be safe. Pigeons fed on rices having a minimum of 0.62 per cent of  $P_2O_5$  did not develop polyneuritis.

A total of 99 samples of rice were found to have at least 0.62 per cent  $P_2O_5$  and afforded complete protection. At the same time there were 45 others that, coming below this minimum, afforded just the same protection. On the other hand, other rices having similar or relatively higher percentage of  $P_2O_5$  than the old standard did not protect from polyneuritis as shown in the following table:

*Samples of rice-producing polyneuritis in pigeons*

Percentage of $P_2O_5$	0.4-0.49	0.50-0.59	0.60-61
Number of samples.....	43	27	2

It must not be forgotten that these experiments were made on pigeons, which are more susceptible to polyneuritis than man. It is probable that certain rices with high  $P_2O_5$  percentage, that have not protected pigeons, would have protected men. It is a fact, however, that none of these rices contained 50 per cent of the external layers of the grain. To show the relation between beriberi and the percentage of  $P_2O_5$ , the following table has been prepared:

*Table showing the relation between beriberi factor and percentage of  $P_2O_5$ .*

Percentage of P <sub>2</sub> O <sub>5</sub>	Beriberi factor								Total	
	0	0.01-0.50	0.51-1.00	1.01-1.50	1.51-2.00	2.01-2.50	2.51-3.00	3.01-3.50		3.51-4.00
0.20-0.40.....	1		1	1	4		3	3		16
0.41-0.60.....	43	6	6	11	9	5	3			88
0.61-0.80.....	73			1			3			74
0.81-1.00.....	25									25
1.01-1.20.....										
1.21-1.40.....										
1.41-1.60.....	1									1
1.61-1.80.....	1									1
Total.....	144	6	7	13	13	5	6	3	3	200

*Results of examination of fat in rices.*—The results of examination of fat in 200 samples chemically examined, showed a wide variation, the figures ranging from 0.22 to 2.86 as maximum. Pigeons fed on rices having at least 1.28 per cent of fat did not develop polyneuritis. Out of the total samples (200) examined 84 or 42 per cent fall below the 1.28 per cent fat and 116 or 58 per cent of the rices gave 1.28 or more percentage of fat, and all (116) afforded protection. The total pigeons that did not develop beriberi, however, is 144. There are, therefore, 28 more samples that, although having less than 1.29 per cent of fat, did likewise afford protection. It is a fact, however, that percentage of fat (1.28), taken as a standard, would constitute a better index than the ash or  $P_2O_5$ , but, practically less dependable than the per cent of pericarp remaining. The

relation between the percentage of fat and the beriberi factor is shown in the following table:

*Table showing the relation between beriberi factor and percentage of fat*

Percentage of fat	Beriberi factor								Total	
	0	0.01-0.50	0.51-1.00	1.01-1.50	1.51-2.00	2.01-2.50	2.51-3.00	3.01-3.50		3.51-4.00
0-0.24					1					1
0.25-0.49					2	1	3		2	9
0.50-0.74			2	5	2	3		2	1	15
0.75-0.90	3	2	3	7	6	1	3			25
1.00-1.24	19	4	1	1	2					27
1.25-1.49	32		1							33
1.50-1.74	27									27
1.75-1.99	29									29
2.00-2.24	18									18
2.25-2.49	12									12
2.50-2.74	2									2
2.75-2.99	2									2
Total	144	6	7	13	13	5	6	3	3	200

In an effort to look for a more dependable and satisfactory standard that would exclude all rices, or at least the great majority of them that may produce beriberi, it was tried to find out whether the summations of ash and  $P_2O_5$  factors together, of  $P_2O_5$  and fat together, and of fat, ash and  $P_2O_5$  and then of 2 fat plus  $P_2O_5$ , of fat plus  $P_2O_5$  plus ash would make a more satisfactory standard. The results of these trials showed, that, the total of fat, ash, and  $P_2O_5$  while it may be considered a better standard than all the rest it excludes also beriberi protecting rices.

A résumé of the values of the percentages of each one of these chemical compositions, as a beriberi preventing index, is shown together in the following table:

*Table showing the values of the percentages of the different chemical components of rice as a beriberi preventing index*

Factors considered	Minimum standard found in percentage or totals	Number of samples of protecting rice excluded	Remarks
Ash.....	1.05	59	
$P_2O_5$ .....	0.62	45	Better than the ash but is not as good as the fat.
$P_2O_5$ + Ash.....	1.70	43	Better than the previous ones.
$P_2O_5$ + Fat.....	1.77	14	Better than fat alone.
$P_2O_5$ + Ash + Fat.....	2.70	13	Better than the previous ones.
2 Fat + $P_2O_5$ .....	3.07	17	Less than $P_2O_5$ + Fat but better than $P_2O_5$ + Ash.
2 Fat + Ash + $P_2O_5$ .....	3.94	13	Not as better as the $P_2O_5$ + Ash + Fat.

In coming to the selection of the best index for the standardization of rice, several factors, should be considered; viz., simplicity in the procedure, easiness in determination, time employed in its determination, practicability of its application and other minor things to suit every particular locality and condition. But, as a general index, the committee may suggest the following, recommended by Colonel Vedder, thus: "Any rice having 1.77 per cent of  $P_2O_5$  plus fat not less than 0.4 per cent  $P_2O_5$  or any rice having not less than 0.62 per cent or any rice having not less than 0.5 per cent  $P_2O_5$  and with at least 75 per cent remaining external layers." One hundred twenty-nine rices containing not less than 1.77 per cent of the totals of these constituents offered complete protection. Out of this total, only one contained as little as 0.4 per cent of  $P_2O_5$ . It is to be observed that only nine out of all the samples that offered protection to pigeons are excluded when the foregoing requirements are possessed. There is, therefore, no possibility of excluding, from the practicability view point, a large proportion of rice for having less than the required  $P_2O_5$  percentage or other constituent.

*Classification of rice in its different stages in the process of milling.*—To formulate a more definite understanding in the designation and naming of the different degrees of milling of rice, the determination of the remaining pericarp by inspection and iodine staining, is suggested as the most practical method, which, besides being convenient and suggestive of the facts regarding the incidence of beriberi, would make it possible to represent the degrees of milling in relative figures. The suggestion is to the effect that rices have 0–20 per cent of the external layers remaining be called *highly milled rice*; those having 21–49 per cent, *medium milled rice*; and from 50–100 per cent, *undermilled rice*.

*Effects of preparation of rice for food on the vitamin content.*—The different procedures used in different countries in the preparation of rice for food may and may not affect the suggested standard for rice as beriberi preventing. We are not very familiar with the methods of preparing and cooking rice in other countries, that common among the Chinese is to cook it with plenty of water as porridge rice, while others cook it with only enough water to cook and dry. The Filipino way of preparing and cooking rice is in detail as follows: (1) place rice in an earthen pot, (2) add enough water to cover the rice,

(3) rub the rice against the inner sides of the pot for one to two minutes, (4) add more water to wash off the dirt and other suspended matters, (5) decant and throw all the water, (6) repeat operations 2, 3, 4, and 5 for two or three more times until the washing is almost clear, (7) add enough water to level of about three or four centimeters above the surface of the rice, and (8) put on the fire to cook.

Taking into consideration that the antineuritic vitamin is freely soluble in water, it may be presumed that rice treated in this way would readily lose part of its beriberi-preventing power. Experiments performed, by the previous committee, on the  $P_2O_5$  content of washed and unwashed rice, showed a reduction of this constituent after washing, the average difference in the ten samples examined being 0.25 per cent less in washed as compared with the unwashed. The practice of rubbing the rice against the inner sides of the pot as is the common way of cooking rice in the Philippines, instead of the mere washing alone used in the experiments, will undoubtedly remove a good portion of the external layers, and consequently reduce to a greater proportion the percentage of  $P_2O_5$  content of the rice grains.

The local method of preparing and cooking rice should always be taken into account as a factor of relative importance when we come to consider the local beriberi incidence.

The index suggested for the standardization of rice provides a considerable margin of safety.

*Transportation and storage.*—Transportation of rice does not offer any problem in connection with the prevalence of beriberi, except perhaps as regards the bags used in the transportation. Paddy rice (palay) does not alter much whether packed in old or new, clean or dirty bags, but milled rice needs to be packed for transportation in clean and insects free bags to protect the same from easy deterioration. Rice, during transportation especially in long voyages, should be protected against moisture. Fortunately in the Philippines, interisland communication are not commonly long enough as to effect much the quality and keeping property of milled rice.

On the other hand, storage presents certain aspects which should be given consideration, administratively speaking. Paddy rice is usually stored not longer than nine months in the Philippines, while rice after milling rarely remains longer than three months before it goes to the consumer. As a matter of

fact, paddy rice under normal circumstances, when in properly ventilated and wet-proof storehouses, does not usually deteriorate after many months or even years. There are different kinds of rice (palay) which deteriorates easily within a short time (garigan and others), but these varieties are raised in very insignificant quantities and only in certain localities of the Islands. On the contrary, milled rice rapidly deteriorates if stored in damp and poorly ventilated places, and if packed or stored in dirty old bags or insect contaminated containers. The degree of deterioration, depends however, on the kind of rice and on the degree of polishing and whitening to which it has been subjected in the milling process as well. In the last report of the Beriberi Committee, the rapidity of deterioration has been the subject of detailed studies. It was found out that undermilled rice deteriorates earlier and more rapidly than overmilled rice (within two months), while the latter can be stored from three to six months.

The deterioration found consisted in the loss of the rice polishings, the destruction of the germs and the kernel and the subsequent reduction of  $P_2O_5$  content. The most important factors found contributing to the deterioration of rice while stored were (a) the polishing itself, due to its hygroscopic property, (b) the mites, and (c) rice weevil and rice beetle.

While trying to find out the most suitable standard for beriberi preventing rice, the following experiment was performed: "Ten kilos of each sample of rice were purchased. The rice was kept in tightly covered tin cans in a dry store room, each can being labeled with the serial number of the rice. As experience promptly showed that weevils, moth and other mites develop in rice so kept, a vial of chloroform with a loose stopper was buried in each sample. The escaping vapor promptly killed all insects and the rices kept in this manner remained in good condition during the 100 days that the experiment lasted."

Whether the long storage and deterioration suffered therefrom affects or not the potentiality of beriberi preventing rice needs further studies and investigations. Instances are there that prove that long stored undermilled rice, although musty and unfit for human consumption, still prevented the development of polyneuritis on fowls, when fed as an exclusive diet. In a special series of experiments, performed by Colonel Vedder, 20 deteriorated and heavily infected samples of rice were

selected, analyzed and fed on pigeons. The results were, that none of them proved to be beriberi preventing rice. It should be noted that 7 out of the 20 samples contained originally 1.77 total of  $P_2O_5$  plus fat, which in accordance with the previous experiments should have prevented polyneuritis.

Several methods have been suggested to prevent the deterioration of rice caused by insects. The use of carbon tetrachloride, of heat, as it is being widely used in the United States, and of chloroform, proved to be effective insecticides but none of these methods have as yet been tried on a large scale. A sanitary regulation to keep rice mills in good, clean and sanitary conditions, providing also for the sterilization of rice bags and containers have been recommended by the Philippine Health Service at the suggestion of the last committee, but unfortunately, very few municipalities have adopted them and the provisions are nowhere strictly enforced.

#### IV. DIAGNOSIS OF BERIBERI

Several times, in the course of the studies that have been made by the various committees, the diagnosis of beriberi as stated in the death returns from the provinces have been questioned, and doubt was aroused as to the correctness of the same and the reliability of the Philippine Health Service mortality figures on beriberi. It was claimed, that, true beriberi cases are seldom seen in Manila (city), and the same condition might be occurring in the provinces. By a resolution of the present Beriberi Committee, it was decided that a clinician be appointed to conduct an investigation on the diagnosis of cases diagnosed as beriberi in the provinces. Accordingly, Dr. Agérico B. M. Sison was appointed and given the following instructions: "In order to have a more dependable basis on which to judge the beriberi situation in the Philippines, especially in the provinces, the diagnosis of beriberi in as many municipalities of several provinces as possible, where beriberi prevails should be verified. Verification of the diagnoses will be made on (a) cases of beriberi found in the dispensaries and puericulture centers, both adults and infants, (b) deaths from beriberi as stated in the death returns, both adults and infants; (c) verify the errors in diagnoses separately in both cases; and (d) make a separate survey to see actually whether or not the disease is really increasing."



The Provinces of Nueva Ecija, Cavite, and Bataan, which appeared to have the highest rate of mortality and morbidity from beriberi, besides Manila, were chosen for this investigation. Another physician, Dr. E. Salud of the Public Welfare Commissioner's Office, helped Doctor Sison in this investigation, which was started on March 24 in Manila and lasted until May 31 in the Province of Bataan.

The towns of San Jose, Muñoz, Aliaga, and Talavera were visited in Nueva Ecija; the municipalities of Rosario, Mendez, Alfonso, Bailen, Kawit, Noveleta, Imus, and Tanza were investigated in Cavite; and in the Province of Bataan, the work was done in the towns of Balaña, Pilar, and Orani. In the selection of these municipalities, the high morbidity and mortality from the disease and the facilities of communication were taken into account.

#### RESULTS OF INVESTIGATION

(a) *Manila*.—Twenty-seven cases were all the cases investigated in Manila during the short period of time available. Out of this total, 23 were among adults and 4 cases among infants. Twenty four of this total (27) were confirmed, giving an error of 11.1 per cent in diagnosis. Out of seven deaths supposed to be due to infantile beriberi, 5 were confirmed with an error of 28.58 per cent. It must be said that all the seven cases of infantile beriberi were dead, only 4 living cases having been found, and 2 out of these, having been confirmed. The diagnoses in these cases were made on the clinical history of both the baby and the mother as found by actual and personal investigations.

(b) *Nueva Ecija*.—A total of 201 living cases and 18 dead of beriberi were investigated. Out of 201 living cases, 189 were among adults and 12 infants, of which 140 cases in adults and 10 in infants were confirmed, giving a total error of diagnosis in 25.37 per cent or 25.93 per cent and 16.67 per cent of error for adults and infants respectively. Out of 18 deaths supposed to have been caused by beriberi in this province, all among infants, 15 were confirmed, giving a correct diagnosis in 83.33 per cent and an error of 16.67 per cent.

(c) *Cavite*.—Eight municipalities have been visited in this province. A total of 184 living cases and 25 deaths diagnosed as beriberi have been investigated. Among the living cases, only 4 were infants, while among dead cases 23 were infants. The errors of diagnosis found were 16.8 per cent in living cases

and 56 per cent in dead cases. All cases among infants were confirmed in 100 per cent while infants whose deaths were attributed to beriberi, 52.12 per cent of the diagnosis was found incorrect.

(d) *Bataan*.—Very few cases and deaths from beriberi were investigated in this province due to the short period of time available. There were in total 17 living cases and 22 deaths investigated. The errors found were 6 per cent in living cases and 45.5 per cent in dead ones. No living case was found among infants, while out of the total 22 deaths diagnosed as beriberi occurring in infants, only 12 were found really due to beriberi, giving an error of 45.5 per cent in diagnosis. A résumé of the findings and errors is given in the following table:

*Errors found in the diagnosis of beriberi*

	Manila			Nueva Ecija			Cavite			Bataan		
	Number investigated	Number confirmed	Error	Number investigated	Number confirmed	Error	Number investigated	Number confirmed	Error	Number investigated	Number confirmed	Error
Living adults.....	23	22	<i>Per cent</i> 4.69	189	140	<i>Per cent</i> 25.93	180	149	<i>Per cent</i> 17.22	17	16	<i>Per cent</i> 6.00
Living infants.....	4	2	50.00	12	10	16.67	4	4	0	0	0	0
Living total....	27	24	11.2	201	150	25.37	184	153	16.8	17	16	6.00
Dead adults.....	0	0	0	0	0	0	2	0	100	0	0	0
Dead infants.....	7	5	28.6	18	15	6.67	23	11	52.17	22	12	45.46
Dead total.....	7	5	28.6	18	15	16.67	25	11	56.00	22	12	45.46

The findings obtained in Manila and three different provinces discard any doubt that errors of diagnosis are frequent especially in the death certificates. Taken as a whole, in the three provinces, the diagnoses were found incorrect in 40.63 per cent of the deaths and 20.64 per cent of living and actual cases. But the wide variation of errors found does not give the gauge of these errors, nor the committee to formulate an acceptable standard for the same that can be applied to our death returns and obtain a corrected death from beriberi. It is to be considered, further, that the number of cases investigated in each province were scarce, the provinces visited very few; that it is not believed they constitute a representative number enough to draw a conclusion therefrom. One fact, however, had become known to the committee and this was, that, in actual living

cases personally seen by health officers in the dispensaries, a relatively small percentage of error 20.64 per cent was detected as compared with the errors found in the diagnoses stated in the death certificates. We have to repeat and remind here the fact that the majority of the death certificates in the provinces are prepared by laymen and the diagnoses stated therein have had to be based on the history of the disease and few data given by the informant, who, in the majority of the cases, being a mere family friend or neighbor might have not even seen the case.

Another thing that the committee can not but overemphasize is the fact, that, no matter how great the error found was in the diagnosis of beriberi in the death returns, the importance of the beriberi problem in the Philippines, as a health problem, can not be minimized nor underestimated. Forty and sixty-three hundredth per cent (40.63 per cent) was the error found in diagnosis of fatal cases in the three provinces, if applied to our mortality figures in the provinces for the last few years they would show that beriberi in the provinces have, as was stated, been increasing. The following table of mortality from beriberi in the provinces, from 1910 to 1917, uncorrected, and from 1918 to 1926 inclusive corrected, on the basis of 40.63 per cent error, is given for information.

Years	Uncorrected
1910 .....	4,128
1911 .....	4,367
1912 .....	4,372
1913 .....	3,194
1914 .....	4,102
1915 .....	4,336
1916 .....	5,874
1917 .....	7,463
1918 .....	7,045
1919 .....	7,114
1920 .....	7,410
1921 .....	9,090
1922 .....	9,642
1923 .....	10,341
1924 .....	10,883
1925 .....	10,653
1926 .....	11,089

#### V. COMMON DIET OF FILIPINO LABORING CLASS

The Filipino laboring class is the group of the population mostly affected by beriberi. The investigation of the last com-

mittee showed that 89.18 per cent of the cases of beriberi occurred among the poor class of the population. Our labor class has very meagre earning and, therefore, they can not be expected to get a varied and more balanced diet. If we admit that beriberi is a vitamin-deficient disease, as it is the general consensus of opinion, it has to be admitted, or at least it should be expected, that, beriberi must be a prevailing disease among our people of the poor class taking into consideration their poor salary, and that rice is the staple diet. The estimate of the daily cost of living in various provincial capitals, according to data obtained from the Bureau of Labor, give the following amount for food for the different years.

*Daily cost of food*

Years	1910	1918	1920	1925
A single laborer.....	P0.43	P0.65	P0.84	P0.71
A family of two adults and three minors.....	0.66	1.21	1.42	1.25

The daily cost of food for a family of two adults and three minors in various localities in the Philippines was also given by the Bureau of Labor as follows:

San Jose, Antique.....	P1.04
Legaspi, Albay .....	1.58
Cebu, Cebu .....	1.28
Davao, Davao .....	1.55
Iloilo, Iloilo .....	1.48
Laoag, Ilocos Norte.....	0.97
San Fernando, Union.....	1.02
Average .....	1.28

It would be worth mentioning also, that the wage earners population in the Philippines is estimated (Bureau of Labor) at 2,857,401 which is about 25 per cent of the total population of the Philippines. The forgoing facts would only show that the population exposed to the risk of contracting beriberi is too big to expect a higher incidence of beriberi in the Islands.

In the investigation of 600 families with a history of beriberi among their members, it was found out by the last committee, that the number of staples of diet, besides rice, which were most commonly consumed, may be reduced to seven varieties. It was also found out that the common diet of families with beriberi cases among their members is not at all deprived of the antineuritic vitamin factor. "On the contrary, the varieties of

food more commonly consumed appear to be relatively rich in this substance. In spite of this fact, the rate of beriberi incidence is high." "Was there an insufficient amount of each variety of food infected and consequently an insufficient vitamin for the requirements of the metabolism? Or are there other factors that should be accounted for in the causation of beriberi among the members of the investigated beriberi families?" These were the two questions made by the last Beriberi Committee for which it was recommended that further studies and investigations be performed.

Taking advantage of the investigations to be performed in various provinces for the verification of diagnosis, Professor F. O. Santos offered himself to work and study for the committee in this respect. Professor Santos visited three provinces, Nueva Ecija, Cavite, and Bataan, and with the coöperation of one assistant made a quantitative and qualitative studies of the common diet of beriberic families, as compared with that of non-beriberic families. Unfortunately, not having finished his experiments on the different varieties of food, he had not been able to submit his report on time to be included here. However, Professor Santos has apparently come to the conclusion, that, the diet of beriberic families, although composed of different varieties, rich in antineuritic vitamin, is insufficient in amount to supply the actual needs of vitamin. It must be said that in the previous investigation performed, the individual food habits of the members of families investigated have not been recorded; it may be that those who came down with the disease are sparingly of the vitamin containing food, even when such articles of diet were available. We personally know of several rich families in which one or two members had beriberi due to their individual likings of vitamin-defficient foods. As soon as the report of Professor Santos is submitted, the same will be published as an appendix to this report.

#### VI. EDUCATIONAL CAMPAIGN—CONFERENCES, LECTURES, PAMPHLETS

Following the recommendation of the previous committee, and the resolution of the last Congress of the Far Eastern Association of Tropical Medicine, the Committee on Beriberi, with the funds available for the purpose, started an educational campaign for the spreading of knowledge of the most important facts about the cause, the prevention, and treatment of beriberi.

The Philippine Health Service, through its medical officers, are coöperating with this work. The work performed in this respect, during the last year, were as follows:

(a) Publication of some hints on beriberi prevention and etiology in the daily papers.

(b) Cinematographic projections on the prevention and causes of beriberi (translated into different local dialects).

(c) Conferences on the same subject given to the teachers in Baguio.

(d) Conferences on the same subject in the towns and barrios by presidents of sanitary division and district health officers as part of their duties.

(e) Publication of a pamphlet on the etiology, symptoms, and prevention of beriberi. This pamphlet is being translated into different dialects.

## VII. TIKITIKI PRODUCTION

The tikitiki production in the Islands has not increased during the last few years. Tikitiki extract is the only product, known by the people to cure beriberi, and it is the most commonly used. The Beriberi Committee has again recommended the purchase of enough material and machineries to increase production for free distribution.

## VIII. SUMMARY

1. Beriberi is a prevailing disease in the Philippines. It is decreasing in Manila, but slightly increasing in the provinces.

2. The importation of rice has relatively increased during the last three years, although our local production has also increased.

3. Correlation exists between the local production of rice and the incidence of beriberi.

4. Beriberi prevails during the months of October, November, December, and January.

5. Beriberi is widely distributed in the Islands, although there is a wide variation in the rates of mortality.

6. The proportion of the external layers remaining on a given rice may be determined with reasonable accuracy by inspection after staining with Gram's iodine solution.

7. Rices examined by inspection method, after staining, having 50 per cent or more of the external layer, do not produce polyneuritis when fed to pigeons.

8. Selection of rice by using the minimum 50 per cent external layers remaining as standard, through staining and inspection method, may prevent beriberi.

9. This method may be used for the classification and naming of the different stages of rice during the process of milling.

10. Amido nitrogen is useless as a chemical index; 1.05 per cent ash is a poor index; 0.62 per cent  $P_2O_5$  content is better, and 1.28 per cent fat is much better index.

11. Rice having 1.77 per cent  $P_2O_5$  plus fat but not less than 0.4 per cent  $P_2O_5$  content, or rices having not less than 0.62 per cent  $P_2O_5$ , or rice having not less than 0.50 per cent  $P_2O_5$  and with at least 75 per cent of the external layers, prove to be a beriberi preventing rice in pigeons. These rices excluded only 9 rices out of 200 that afforded protection to pigeons.

12. Rice becomes deteriorated while stored and the causes of deterioration are mainly dampness and insects.

13. Undermilled rice deteriorates earlier and more rapidly than the overmilled rice.

14. The different trial methods of preparing rice for food affects the  $P_2O_5$  and presumably the vitamin content.

15. Errors of diagnosis of beriberi in the city and the provinces, not only in living cases but also in fatal cases, were found. There is wide variation in the errors found in different localities.

16. No matter how great the error found was; there is no doubt that the problem of beriberi is of capital importance in the Islands.

17. Our laboring and poor classes is the most affected by beriberi.

18. The average daily cost of food for a family of two adults and three minors is ₱1.25. This amount is considered too small to permit an abundant food.

19. The diet of beriberic families as found by the investigation, although varied, seems to be inadequate in amount.

#### IX. RECOMMENDATIONS

1. Fifty per cent remaining external layers of the grain of rices, determined by staining and inspection methods, should be recommended as standard for the selection of rices for institutions and armies. This is not recommended as a legal standard.

2. Rices with 0-20 per cent of the external layers should be called *highly milled rice*. Those having 21-49 per cent, *medium milled rice*, and those having 50-100 per cent, *undermilled rice*. In the determination of the percentages of remaining ex-

ternal layers the Gram iodine staining and inspection method should be used.

3. The production of highly milled rice should be discouraged.

4. Any rice having 1.77 per cent of  $P_2O_5$  plus fat, but not less than 0.4 per cent  $P_2O_5$ ; or any rice having not less than 0.62 per cent  $P_2O_5$ ; or any rice having not less than 0.50 per cent  $P_2O_5$  and with at least 75 per cent of the external layers of the grain remaining is suggested as the tentative chemical index.

5. The production of vitamin-containing vegetables should be encouraged.

6. A wide campaign of education for the spread of knowledge about beriberi prevention should be continued.



## MALARIA SURVEYS AND CONTROLS IN MINDANAO AND SULU

By ANTONIO EJERCITO

*Senior Surgeon, Philippine Health Service*

In compliance with the Special Order No. 6, paragraph 50, dated June 26, 1928, of the Director of Health, the writer left Manila at 12 midnight of June 27, 1928, and arrived at Kolambugan, Lanao, 5 a. m. on July 1, 1928.

Upon arrival thereat, he discussed the plans of malaria surveys and establishment of control areas with the district health officer of Lanao, and duly informed the deputy governor of Kolambugan, and the authorities of the Kolambugan Lumber and Development Company of the great work that was to be undertaken. It was learned from the district health officer that there have been tentative plans to extend the malaria control work west and east of Kolambugan district along the coast, in the Capatagan district and in the vast area towards Iligan, only to be handled by efficient organization. The tentative plans have been made out on the ground that the province has set aside a sufficient fund to warrant the extension of malaria control work thereof. Just to show a conception that has been created by such preventive measure, an extract of 1927 Annual Report of the Deputy Governor of Kolambugan on health is hereby quoted: "Malaria control has been established in all the logging camps of the Kolambugan Lumber and Development Company and also in the important barrios in this district. It is pleasing to report that the malaria infested barrios in the past years such as Binuni, Lipoo, and Liañgan which caused several deaths in previous years have been properly under control this year." The manager and physician of the aforementioned company showed particular interest in the malaria control work thereof and decided willingness to coöperate for its successful maintenance.

As regards the malaria situation in the localities to be surveyed, the writer hereby presents the data gathered from the

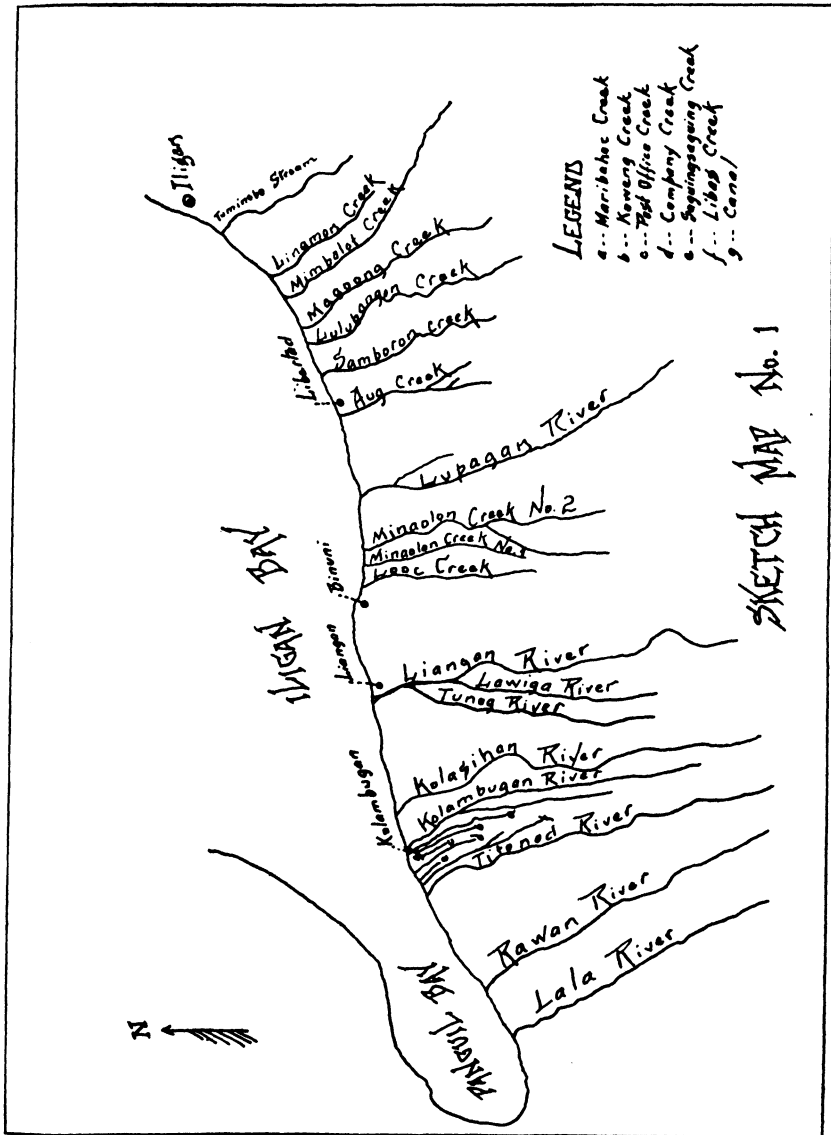
office of the district health officer, which only correspond to the year 1927:

Place	Estimated population	Cases	Deaths	Morbidity per 1,000	Mortality per 1,000
Kolambugan (includes Binuni, Mimaalon, and logging camps).....	3,404	270	51	86	15
Lala (includes Rawan and Tubod).....	604	225	0	596	None
Libertad (includes Mimbalot, Magoong, Lulubañgon, Samboson).....	1,830	243	13	153	7

NOTE.—The above data were reported by dispensary attendant of the different localities.

To present vivid picture of the place that was surveyed and where malaria control areas were established and to show therefore, the start, course and end of the work, a sketch map No. 1 of the northern coast of Lanao showing the streams, is drawn on the succeeding page. We started the malaria survey and control work at the Kapatagan district west of Kolambugan and continued on eastward to end at Iligan. The streams that were surveyed are as follows: Lala River, Rawan River, Titonod River, Livas Creek, Saguing-saguig Creek, Company Creek, Post-Office Creek, Kowing Creek, Maribuhoc Creek, Kolambugan River, part of Kulasihan River in Kulasihan Logging Camp, Liañgan River with its branches (Tunog and Lawiga Rivers), Looc Creek, Minaolon Creek No. 1, Minaolon Creek No. 2, Lupagan River, Aug Creek, Samboron Creek, Lulubañgon Creek, Magoong Creek, Mimbalot Creek, and Tuminubo Creek. In the two Kolambugan logging camps which are rather in the interior and cannot be shown in the sketch map No. 1, Bulod streams with their branches and Tibañgon Creek have been also surveyed as shown elsewhere in the sketch map of control areas.

In the survey of the streams and establishment of malarial control areas, some criterion has been followed. A malaria control area is established by considering the actual size of a locality and an area on land of  $1\frac{1}{2}$  kilometer radial extension from its suburb houses. While a control area in the interior locality is generally extensive as we have to consider the surroundings in all directions, that of sea-coast locality is of course less extensive in view of the fact that the environment which corresponds to the sea is not naturally considered. Once the limits of a control area are established, all of the anopheles minimus breeding places which might be river, creek, spring, etc., are looked for within the established area. All of the breeding places are then divided into larva stations to be identified by numbers. A larva station means an estimated distance on the



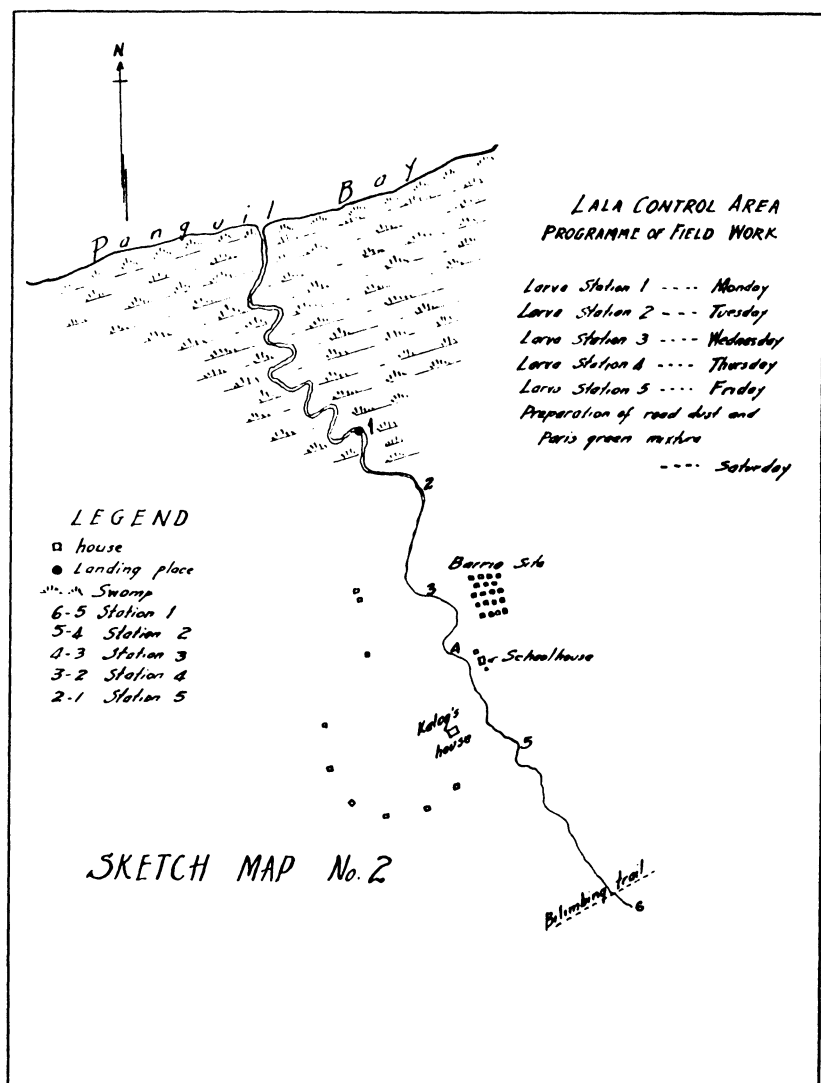
course of a stream, that a regular laborer can cover in one day spraying of Paris green mixture. In view of the fact that a week's period, only five days can be devoted to Paris green mixture spraying, as one day (Saturday) is for the preparation of road dust and Paris green mixture for the succeeding week's consumption and another day (Sunday) is a rest day, larva stations, in case the breeding place is fairly extensive, are grouped into sections of five larva stations each. A section, therefore, signifies the amount of field work a regular laborer can cover in one week's period of five spraying days, and has also to be properly identified. Since all the anopheles minimus breeding places must be sprayed once a week with Paris green mixture, the number of sections established in the said control area, indicates the number of field laborers needed to handle the control work. In case the anopheles minimus breeding places in a control area are not so extensive, and there are only two or three or four larva stations not sufficient to warrant the establishment of a section, the field laborer is employed and paid according to the days he works and not a regular everyday laborer. With the establishment of larva stations and sections in a control area a programme of work is drafted to indicate the spraying of each larva station per day during the week.

The advantages of the foregoing organization of a malaria control area may be briefly summarized as follows:

1. When checking for the presence of anopheles larva, easy reference can be made to any particular spot of an extensive breeding place by simply mentioning the larva station and section where such are found.
2. Without much difficulty, any new field laborer can be employed from time to time, as there is already established amount of work per day (larva station) that he is supposed to finish so that he can cover the entire section during a week's period.
3. With the programme of work and the larva stations and sections, the field laborers or the control laborers can be easily localized on particular days of the week for purposes of supervision.
4. Knowing that a particular section is being taken care of by a particular field laborer in a control area, one can readily detect any negligence on the part of such laborer.
5. With the establishment of larva station and sections, and a programme of work to indicate just that is to be done on particular days, the field operation and supervision in a Malaria Control Area become more or less routinary.

In Lala of the Kapatagan district, there was only one anopheles breeding place found, and that was the Lala River. This is

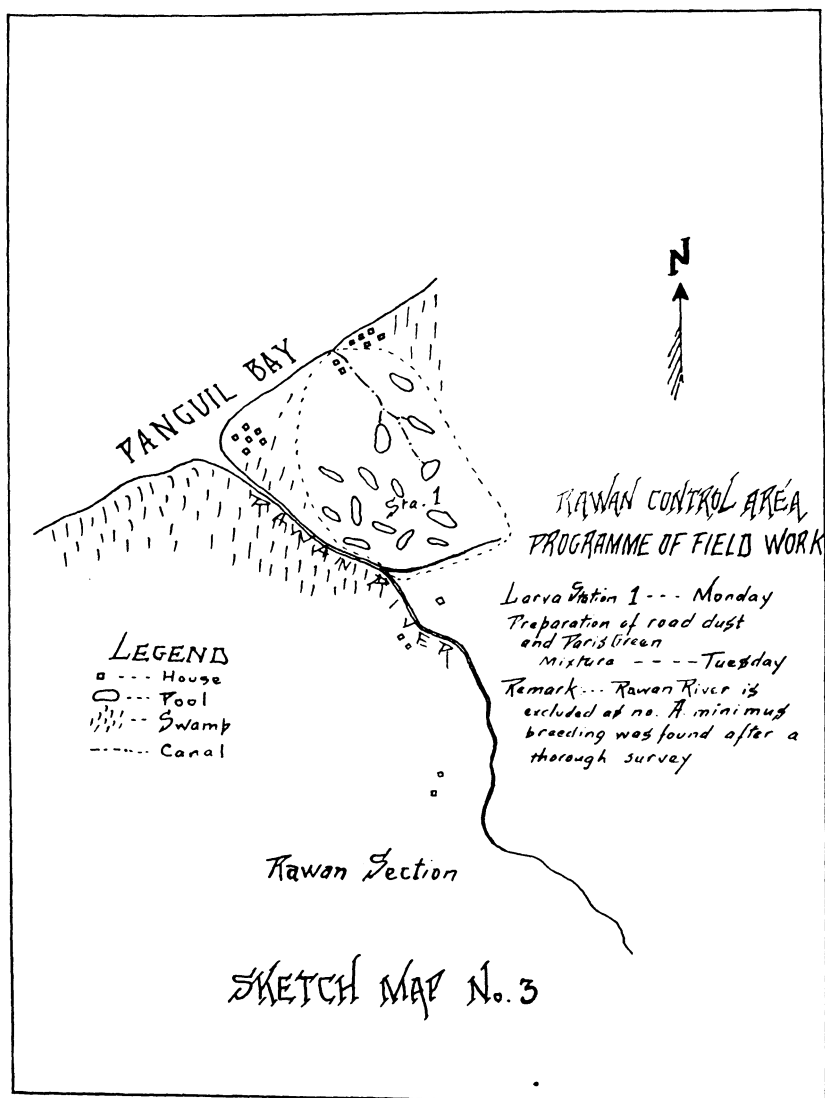
rather small, flowing, clear river, mostly under shade. A distance of about 2 kilometers in the course of the stream was covered and there were collected 86 *A. minimus* (typical) larvae. A control area was established marking five larva stations and limit on the stream for control work. A sketch map No.



2 on the succeeding page showing the group of houses and larva stations on Lala River are presented for illustration. A pro-

gramme of field work follows the illustration to further show how the malaria control work has been established thereat. We left Lala and traveled eastward about 6 kilometers to reach Rawan.

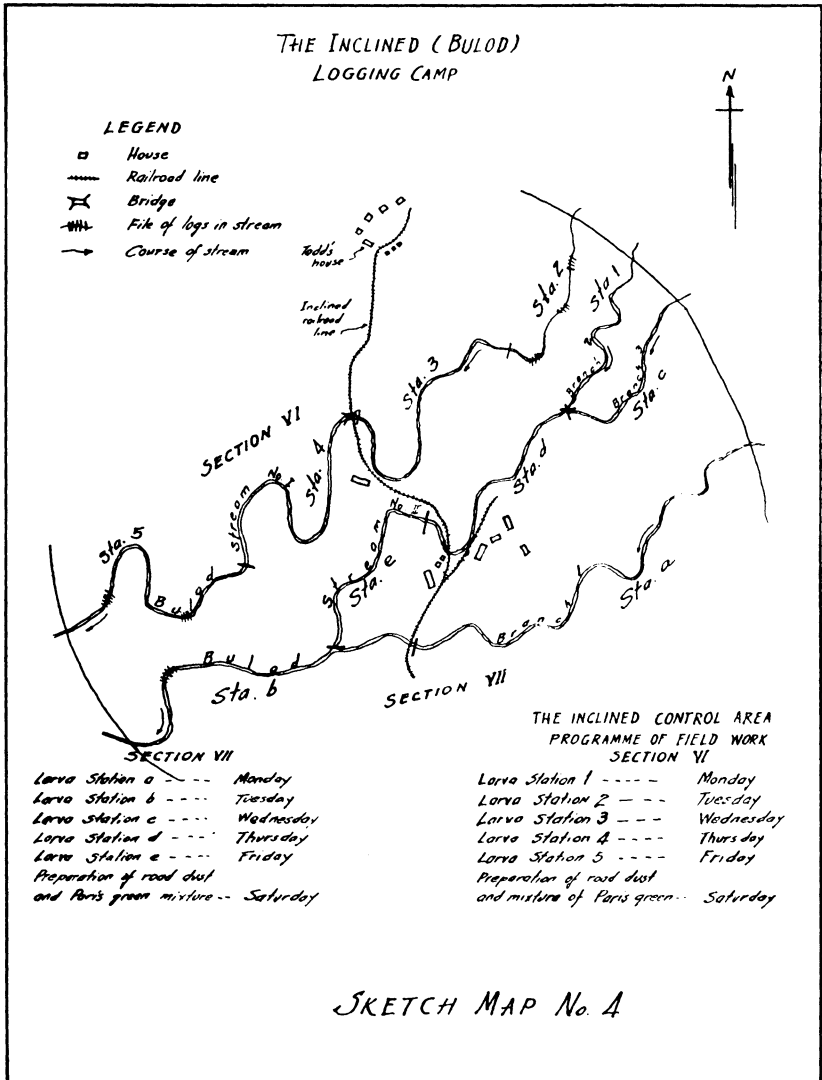
In Rawan of the Kapatagan district, Rawan River, although known to harbor crocodiles, was surveyed and in its course a distance of about 2 kilometers was covered. This river is rather wide, fairly deep in some parts, clear and slowly flowing. To



the surprise of the writer, there was but one small *barbirostris* larva found; and this was gotten in some debris on the side of the stream almost at the limit of the control area. In view of the fact that the river was practically nil as regards anopheles breeding; and there was no anopheles minimus larva found, further careful search for some possible breeding places within the control area was done, as there could not have been any spread of malaria in the locality had there not been any vector's breeding place therein. There were found swamps, pools and fairly good size seepage, a thorough survey of which revealed anopheles larvae identified to be 2 *A. minimus* (typical) and 4 *A. Hyrcanus* from the seepage; 12 *A. Rossii*, 2 *A. Ludlowi*, and 2 *A. Umbrosus* from the pools and swamps. In the control area, there was only one larva station established as the breeding was not so extensive to demand for more. A sketch map No. 3 of the control area and programme of field work are shown on the succeeding page. We left Rawan and traveled eastward on a distance of about 20 kilometers to reach Kolambugan. From Kolambugan we went to the inclined logging camp, covering a distance of about 18 kilometers.

The inclined logging camp is situated right on a mountain in a forest region. Its population is estimated to be around 400 and composed mostly of laborers. Malaria control work was being handled thereat by the Kolambugan Lumber and Development Company; and upon investigation it was found out that there was no organization, no close supervision over the field laborers and the control area was rather small. The limits of the control area were therefore duly extended; and survey of the streams within such area was made. It was found out that there are streams untouched by the field laborers, judging from the impassable obstacles met in their course. It deserves special mention the difficulties encountered in passing over great extension of heavy logs as debris across the streams. We grouped the breeding places into two sections, each comprising five larva stations. Bulod Stream No. 1 is slow-flowing, clear, partly shaded, and stony. Herein there were collected anopheles larvæ identified to be 32 *A. Rossii* (*vagus*) found in stagnant water on the side of the stream where there was decaying logs, 14 *A. minimus* (typical), 2 pupae which when bred out were identified to be one male and one female *maculatus*. Bulod Stream No. 2 is very slowly flowing in some parts, in others semistagnant or stagnant. In some sections of the streams, logs

most of which are decaying are abundant across the stream, thus, making the way along its course extremely difficult. In this stream the larvæ that were collected were identified to be 1 *A. Barbirostris*, 4 *A. minimus*, and 6 *A. Rossii* (*Vagus*). A sketch map No. 4 of the control area, as established, of the inclined logging camp and programme of field work are presented in the succeeding pages as an illustration of the organization. From the inclined logging camp we returned to Kolambugan and





then traveled about 12 kilometers to reach Kolasihan logging camps.

A malaria control area was first established in the old Kolasihan logging camp. There are two streams that were surveyed; namely, the Tibañgon Creek which is flowing, clear, shallow, and mostly under shade; and the big Kolasihan River which is flowing, clear, fairly deep in parts and wide. There were two sections established, each to consist of four larva stations. In the big Kolasihan River there were 37 anopheles larvæ collected and identified to be 17 *A. maculatus*, 2 *A. Aitkeni*, and 18 *A. Rossii* (vagus). The *A. Rossi* (vagus) larvæ were found in the semistagnant branch of the river where there were plenty of debris and algae. We left this old Kolasihan logging camp and covered a distance of about 3 kilometers to reach the new Kolasihan logging camp. There was only one breeding place that was found and not extensive, so that the control work thereof was included in the foregoing established control area. The said breeding place is the so-called small Kolasihan River which is flowing, clear, mostly under shade, and markedly stony. In this stream there were 95 anopheles larvæ, 64 of which are new species as yet unidentified Philippine anopheles, 24 are *A. Aitkeni* type I, 1 is *A. Minimus* (typical), and the rest are *Aitkeni* type II.

Without presenting a detailed study as it really requires and since such is not the motive of this paper, only the larva of the apparently new species is described and presented very briefly as follows:

A large larva, marked by white and black bands: anterior half of the thorax is white while the posterior half is black; first abdominal segment is black, second abdominal segment is white; third and fourth abdominal segments are black; fifth abdominal segment is white; sixth, seventh, and eighth abdominal segments are black.

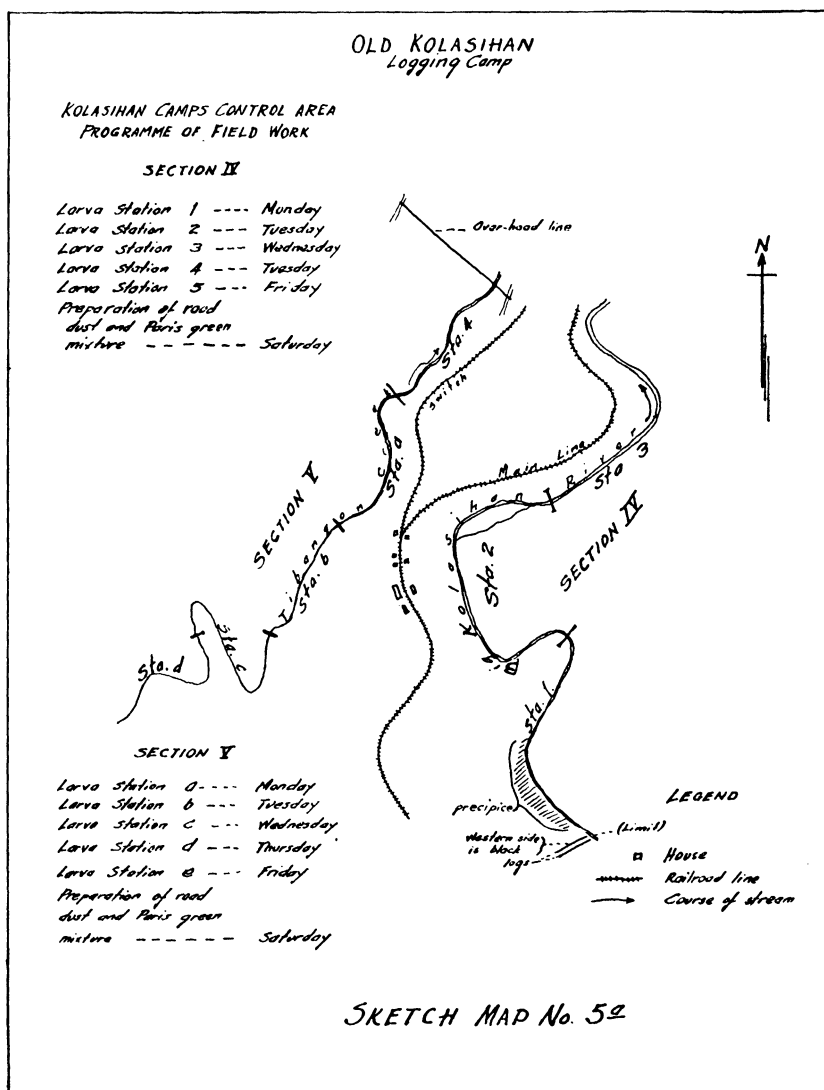
*Head*.—Clypeal hairs, inner anterior clypeal hairs are long, finely frayed, parallel and fairly far from each other; outer anterior clypeal hairs are fine and markedly short and fairly close to the inner anterior. Antennæ have no branched hairs.

*Thorax*.—Anterior submedian thoracic hairs arise from large tubercles, and possessing stout branches. The inner anterior submedian thoracic has 14 branches.

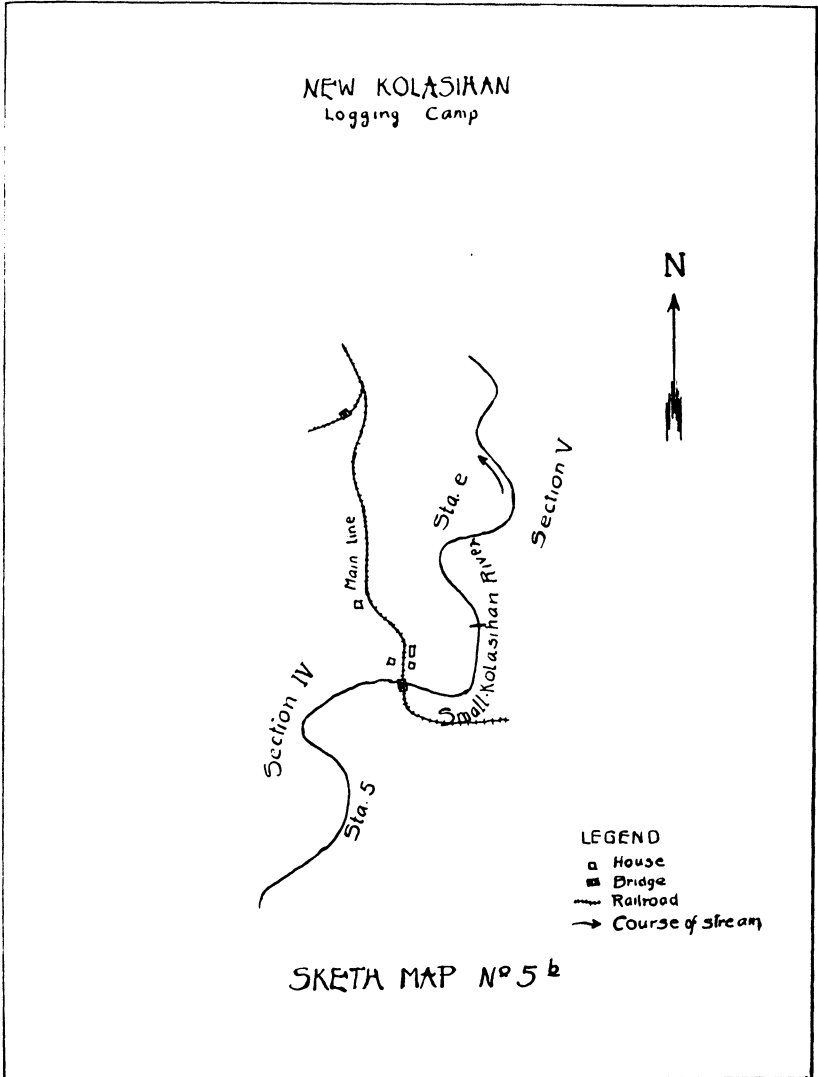
*Abdomen*.—Palmate hairs of the first segment are rudimentary. Palmate hairs from the second to seventh segments are fully developed; and each with 12 to 16 steepled leaflets. Tergal plates are not prominent. Comb is with four long and eight short teeth.

Larvæ of this species were bred out and the adults were sent to malaria control laboratory with some of the preserved larvæ.

For an illustration of the malaria control organization established to cover the old and new logging camps, sketch maps No. 5-A and 5-B of the control area and programme of field work are presented in the following pages. It might be remarked in this connection that while there was some control work being done at the old Kolasihan logging camp, there was none in the new camp; and that the control work being done thereat by the Kolambugan Lumber and Development Company lacked



the necessary extension and proper supervision. We left the Kolasihan logging camps and return to Kolambugan to make a resurvey of the breeding places thereat and reorganize the malaria control work.



In Kolambugan, investigation of the former control area revealed that it is rather defective in the sense that while some minimus breeding places were not included, those included were

not fully attended to. Hence, the former control organization was completely revised inasmuch as it was duly extended, the minimus breeding places that were not formerly attended to were included, the number of field laborers was increased and a programme of work conforming to the newly established fifteen larva stations and three sections was prepared to systematize the field operation.

Checkings for the presence of anopheles larvæ in the different breeding places within established limit of the control area in Kolambugan district were done and the findings are as follows:

In the Maribuhoc Creek which is winding, flowing, narrow, shallow stream, there were collected 122 anopheles larvæ, and identified to be 106 *A. minimus* (typical) and 16 *A. maculatus*.

In the Company Creek which is flowing, slightly turbid, shallow, and narrow, there were collected 10 *minimus* (typical).

In the Libas Creek which is slowly flowing, fairly clear, wide and shallow stream, there were collected 28 *minimus* (typical), 13 *Barbirostris*, 11 *Rossii* (*vagus*) and 1 *Rossii* (*subpictus*).

In the Saguing-saguing Creek which is clear, very slowly flowing, short and fairly narrow, there were collected 6 *A. Barbirostris* and 5 *A. minimus* (typical).

In the Intermediate Creek which was particularly insignificant at the time as there was little water, there were found of the total larva collections 4 *Rossii* (*vagus*) and 1 *Hyrceanus*.

In the market canal there were collected 2 *Barbirostris*, 3 *Hyrceanus* and 18 *Rossi* (*vagus*).

In the big Kolambugan River which is flowing and fairly big in size, there were found 47 *A. minimus*, 9 *A. maculatus*, 1 *A. Barbirostris*, and 2 *A. Umbrosus*.

In the small Kolambugan River which is of similar nature but only smaller than the preceeding one, there were collected 19 *A. minimus* and 1 *A. Barbirostris*.

In Koing Creek, which is slowly flowing narrow and slightly turbid, there were found 26 *A. minimus*, 4 *A. Barbirostris* and 2 *Ludlowi* (*vagus*).

Lobasan Creek is apparently semistagnant, rather narrow, and of short extension. In this, there were found 22 *A. minimus*, 4 *Barbirostris*, and 2 *Rossii* (*vagus*).

In Titunod River with its branches, which is flowing, clear, and extensive, there were found 25 *A. minimus* and 2 *A. Barbirostris*.

For an illustration of the control area established in Kolambugan district a sketch map No. 6 with the larva stations and

sections marked out is presented in the following page. A schedule of work for field operation is subsequently included to elucidate the present established activity in the malaria control work thereat. The force of three field laborers that formerly was handling the whole malaria control work covering the control areas of the two logging camps and that of the Kolambugan district (which all in all were two extensive and beyond their ability to handle efficiently) has been increased to that of seven field laborers. In this connection, attention is invited to the copy of the letter of the writer dated July 19, 1928, to the manager of the Kolambugan Lumber and Development Company attached herewith furnishing information regarding the completion of malaria survey, and establishing of control areas and the need of seven field laborers thereof.

#### KOLAMBUGAN DISTRICT CONTROL AREA PROGRAMME OF FIELD WORK

##### *Section I*

Larva Station 1 .....	Monday
Larva Station 2 .....	Tuesday
Larva Station 3 .....	Wednesday
Larva Station 4 .....	Thursday
Larva Station 5 .....	Friday
Preparation of road dust and Paris green mixture.....	Saturday

##### *Section II*

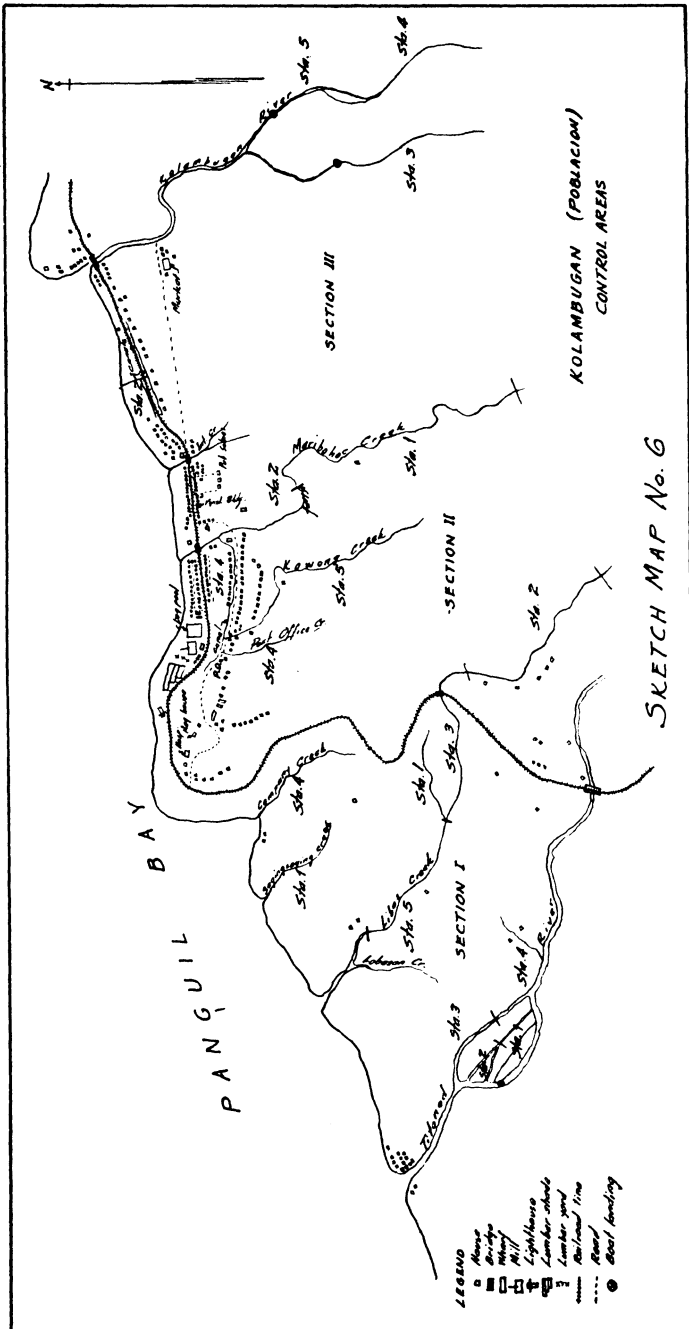
Larva Station 1 .....	Monday
Larva Station 2 .....	Tuesday
Larva Station 3 .....	Wednesday
Larva Station 4 .....	Thursday
Larva Station 5 .....	Friday
Preparation of road dust and Paris green mixture.....	Saturday

##### *Section III*

Larva Station 1 .....	Monday
Larva Station 2 .....	Tuesday
Larva Station 3 .....	Wednesday
Larva Station 4 .....	Thursday
Larva Station 5 .....	Friday
Preparation of road dust and Paris green mixture.....	Saturday

In Kolambugan district, 208 school children were examined; and there were found 18 with enlarged spleens and 5 with bloods positive of malaria. Therefore, the spleen index is 8.7 per cent while the blood index is 2.4 per cent. For particulars regarding this matter, reference might be made to the table on Spleen and Blood Indices included elsewhere in this report.

Being through with our mission in Kolambugan district, we traveled eastward and covered a distance of about 9 kilometers to reach the barrio of Liañgan.



In Liañgan, within the control area established, two extensive *A. minimus* breeding places were discovered; namely, the Tunog River and Lawiga River, both being branches of the big and deep Liañgan River. Five larva station were established in each of the two breeding places known to be the Tunog and Lawiga sections. In the Tunog River which is flowing, clear, fairly shallow and in parts shaded, there were collected 97 anopheles larvae and identified to be 27 *A. Barbirostris*, 64 *A. minimus*, 1 *Aitkeni* type II and 5 *Aitkeni* type I.

In the Lawiga River which is practically similar in nature as the foregoing described breeding place, there were collected 32 *Anopheles* larvae identified to be 12 *A. minimus*; 18 *Barbirostris*; 2 *A. Aitkeni* type I, and 1 *A. Hyrcanus*.

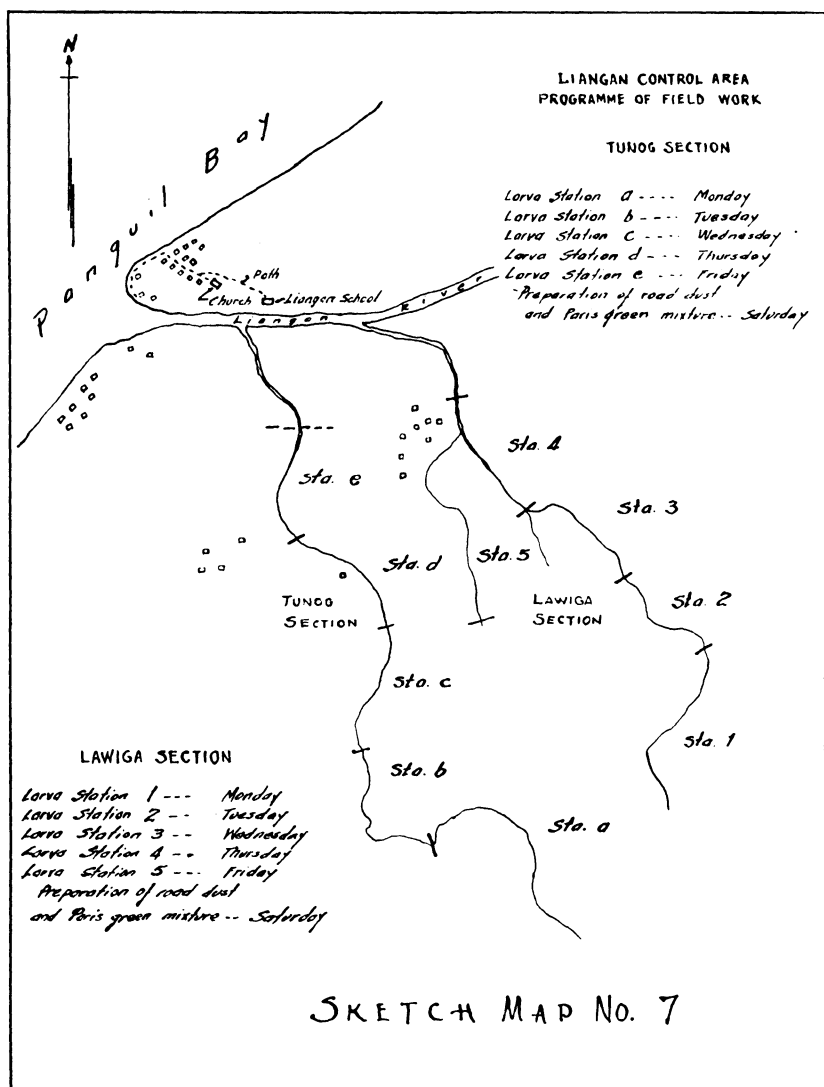
A sketch map No. 7 of the control area established at Liañgan showing in particular the larva station and section, and a programme of work for the field control operation are presented in the succeeding page.

In the public school of Liañgan, 43 children were examined, and there were 19 with enlarge spleens and 9 with positive bloods, thus resulting to 42.2 per cent spleen index and 20 per cent blood index. For further details of the blood and spleen survey, reference might be made to the table on spleen and blood indices.

Being through with our work, we left Liañgan and resumed our travel eastward covering a distance of about 8 kilometers to reach the barrio of Binuni.

In the barrio of Binuni, within the established control area, there were three anopheles *minimus* breeding places found, corresponding to Looc Creek, Minaolon Creek No. 1, and Minaolon Creek No. 2, respectively. The streams were surveyed along their courses and found them in parts to be dry. Considering the markedly limited breeding places within the control area to comprise the so-called Binuni section, there were only three larva stations created. In Looc Creek, which is small, slowly flowing, of clear water and partly shaded, there were collected 10 *A. minimus* larvae. In Minaolon Creek No. 1, there were collected 7 *A. minimus* and 3 *A. Barbirostris* larvae. In Minaolon Creek No. 2, which is fairly long, winding, slowly flowing and slightly turbid, and partly shaded there were collected 20 *A. minimus* and 13 *A. Barbirostris*.

A sketch map No. 8 of the control area at the barrio of Binuni and the programme of field work, are presented in the succeeding page.

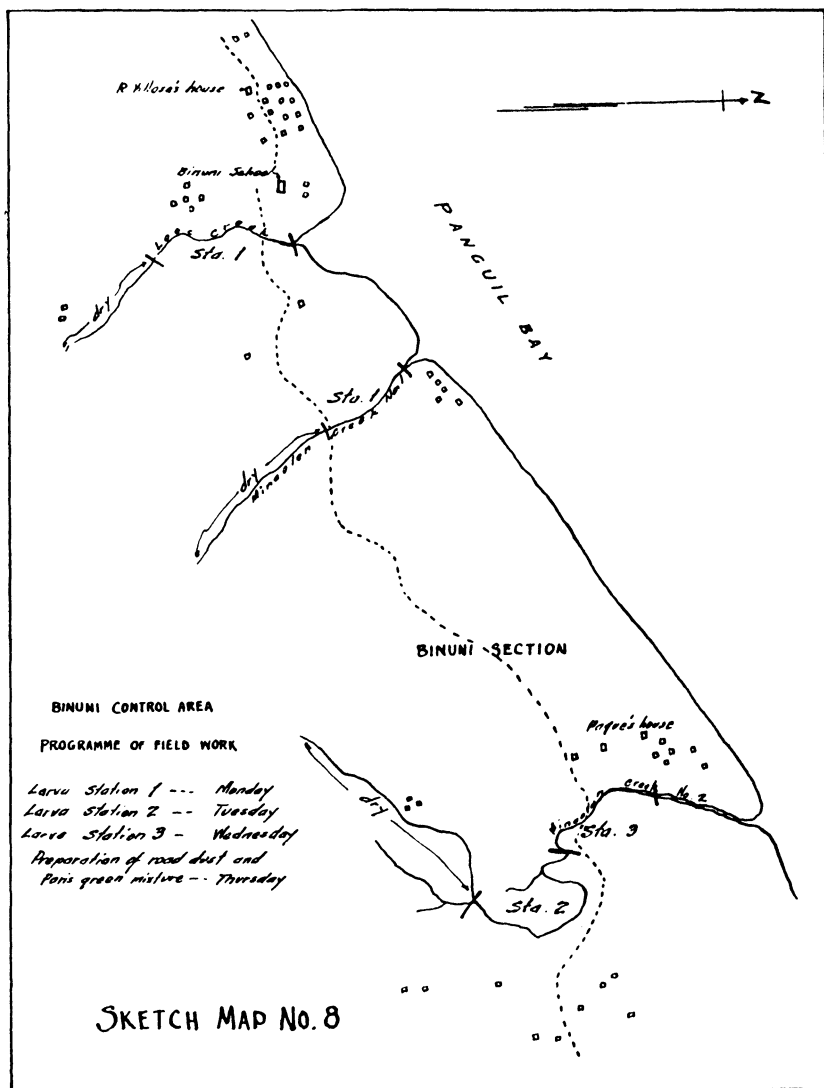


In the public school at Binuni, there were examined 45 children; 19 were found to be with enlarged spleens and 9 with positive bloods,—thus resulting to 42.2 per cent spleen index and 20 per cent blood index. Reference might be made to the table on Spleen and Blood indices.

From the barrio of Binuni, going eastward we covered a distance of about 3 kilometers to reach Lupagan barrio.



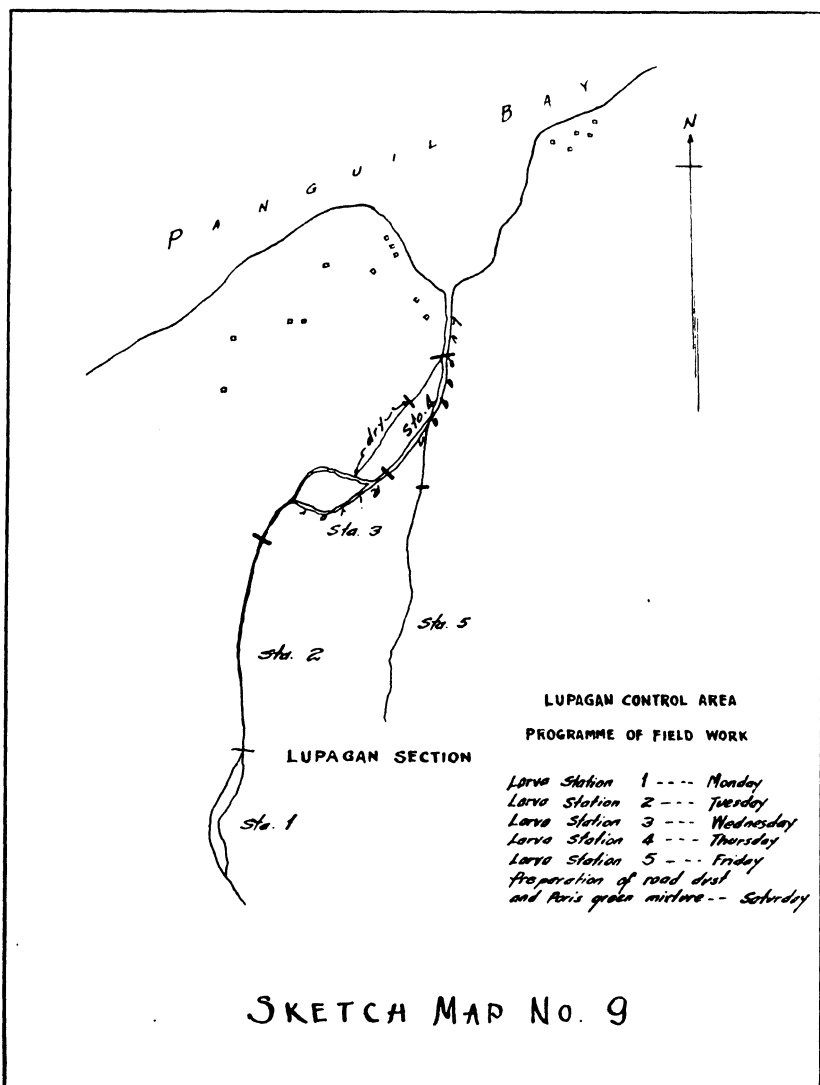
In Lupagan barrio, the Lupagan River and some branches were found to be the only anopheles breeding palces. In view of the fact that the breeding places cover a fairly extensive area, there have been established five larva station to com-



pose the so-called Lupagan section. Inasmuch as this is rather far already from the barrio of Binuni, it is therefore considered a control area independent of that of Binuni, so as to make the

supervision closer and better. In this stream, there were collected anopheles larvae and identified to be 25 *A. Barbirostris*, 4 *A. minimus* and 2 *A. Hyrcanus*. A sketch map No. 9 of the control area and a programme of work are presented in the following pages.

We left Lupagan and went to the barrio of Libertad; the latter is about 9 kilometers east of the former.



In Libertad, there is only one anopheles breeding place that was found; and this is a part of the Aug Creek not reached by sea water and not marshy. From such breeding place which is slowly flowing, clear, shallow stream, there were collected 7 anopheles larvae identified to be all *A. minimus*. Although the breeding place is rather short so that only one larva station has been established thereof, nevertheless one control area is considered at Libertad in view of the fact that this is far enough from the neighboring barrios. A sketch map No. 10 of the control area with a programme of field work is presented in the following page.

In the public school at Libertad, 25 children were examined; and there were found 11 with enlarged spleens; thus giving 44 per cent spleen index. Blood films taken from them were unfortunately spoiled.

We left Libertad and resumed our travel eastward to reach Samboron-Lulubañgon-Magoong district, covering a distance of about 3 kilometers.

In the Samboron-Lulubañgon-Magoong district, three anopheles breeding places corresponding to Samboron Creek. Lulubañgon Creek and Magoong Creek were discovered. The anopheles larva collections from these places are as follows:

(a) Samboron creek = 3 *A. Ludlowii*, 11 *A. Rossii* (vagus), and 3, *A. Barbirostris*.

(b) Lulubañgon creek = 1 *A. minimus*, 16 *A. Barbirostris*, 2 *Aitkeni* (type II).

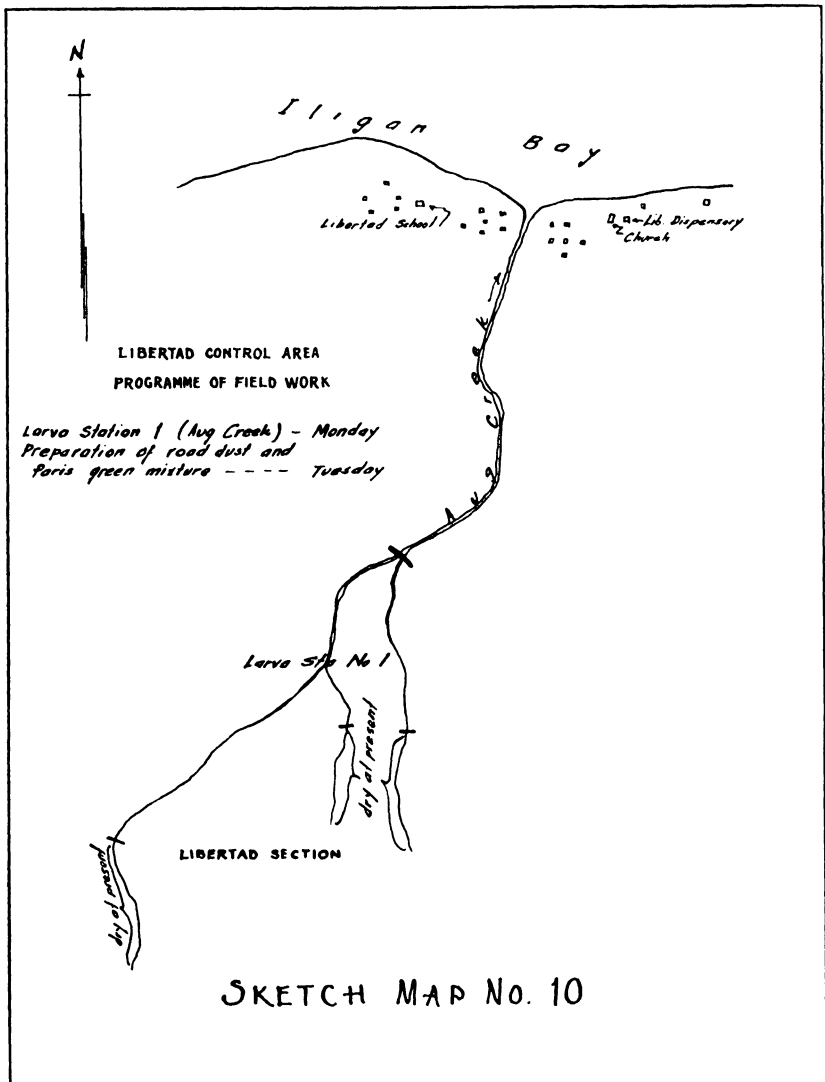
(c) Magoong creek = 4 *minimus*, 15 *A. Barbirostris*, and 1 *Aitkeni* (type II).

In the control area, there have been established the Samboron section composing of 3 larva station and Magoong-Lulubañgon section composing of 5 larva stations. A sketch map No. 11 of the control area and a programme of work are presented in the following pages.

#### SAMBORON-MAGOONG-LULUBAÑGON CONTROL AREA AND PROGRAMME OF FIELD WORK

##### *Samboron Section*

Larva Station A .....	Monday
Larva Station B .....	Tuesday
Larva Station C .....	Wednesday
Preparation of road dust and Paris green mixture.....	Thursday



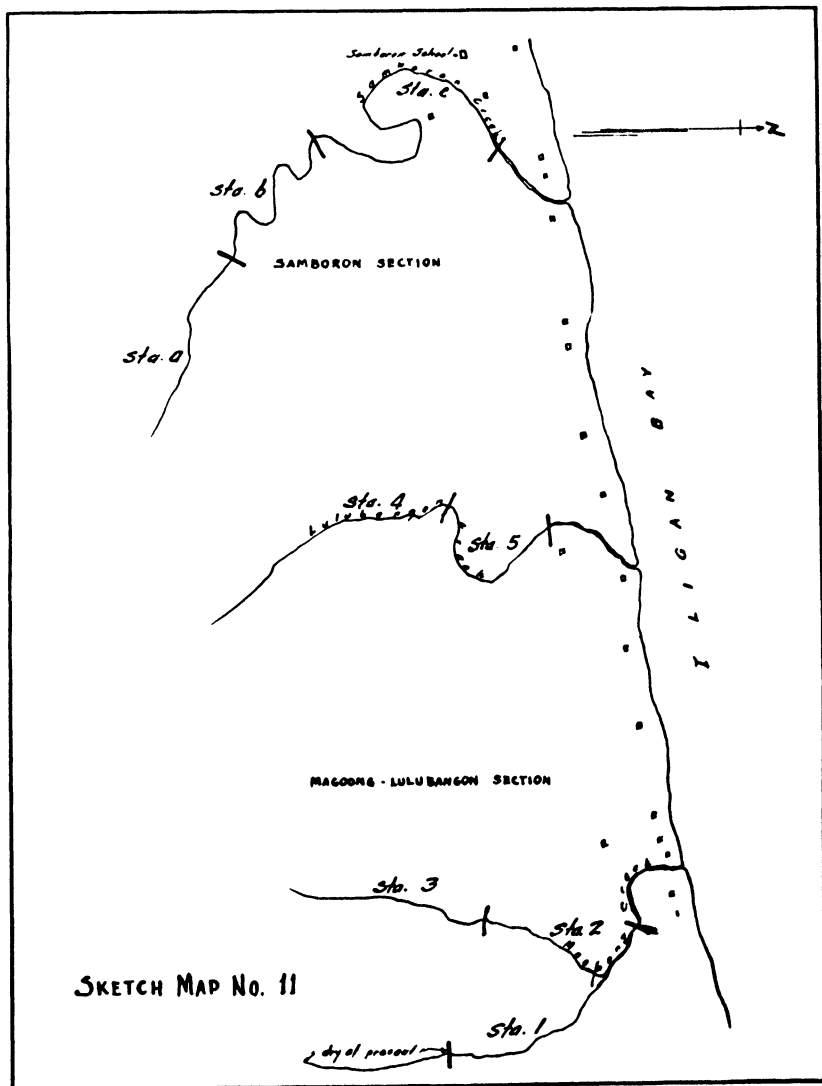
### Magoong-Lulubañgon Section

Larva Station 1 (Magoong Creek)	Monday
Larva Station 2 (Magoong Creek)	Tuesday
Larva Station 3 (Magoong Creek)	Wednesday
Larva Station 4 (Lulubañgon Creek)	Thursday
Larva Station 5 (Lulubañgon Creek)	Friday
Preparation of road dust and Paris green mixture.....	Saturday

In the public school of Samboron, 28 children were examined: and there were found 13 with enlarged spleens, and 4 with

positive bloods,—thus resulting to 46.4 per cent spleen index and 14.3 per cent blood index.

In the public school at Boroon a nearby barrio of Samboron, 37 children were examined; and there were found 9 with enlarged spleens and 6 with positive bloods,—thus resulting to 24.3 per cent spleen index and 16.2 per cent blood index.



If further details regarding blood and spleen surveys are desired attention is invited to the table on spleen and blood indices, attached herewith.

We left Samboron-Magoong-Lulubañgon district, and resumed our travel eastward to reach the barrio of Mimbalot, covering a distance of about  $2\frac{1}{2}$  kilometers.

In the barrio of Mimbalot, the Mimbalot River is the only anopheles minimus breeding place discovered in the survey within the established control area. From this river, which is flowing, of clear water, fairly wide with vegetations on the sides, generally shallow, and of long extension, there were collected 77 anopheles larvae and identified to be all *A. minimus*. The river is of such extension within the control area so as to warrant only 4 larva stations, to compose of the so-called Mimbalot section.

A sketch map No. 12 of the Mimbalot control area with a programme of work in the field activity thereat are presented in the following page.

We left Mimbalot and continued our way eastward to Tuminubo, a barrio of Iligan, and covered a distance of about 5 kilometers.

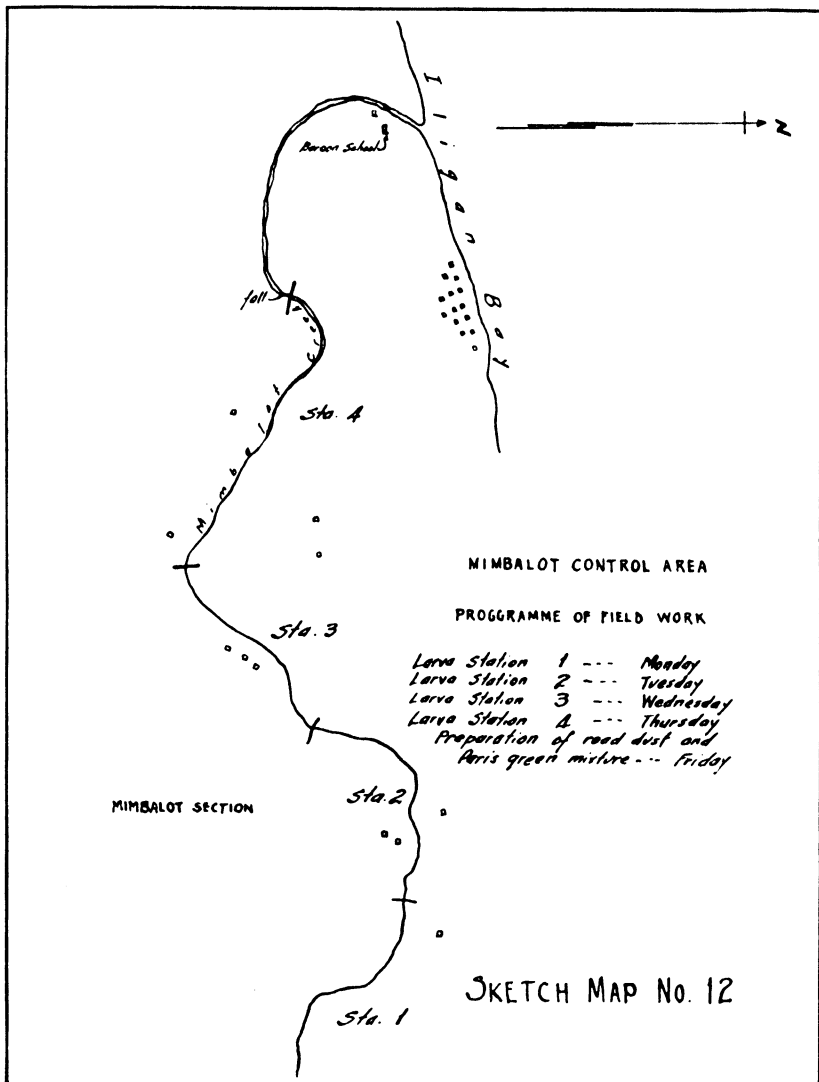
In the barrio of Tuminubo, the anopheles minimus breeding places were found in the Tuminubo stream and its two branches. The stream is slowly-flowing, clear, shallow and mostly shaded. From this there were collected 20 anopheles larvae identified to be 8 *A. minimus* (typical), 9 *A. Barbirostris*, 2 *Aitkeni* (type I) and 1 *A. Ludlowii*.

In the control area that was established the breeding places were divided into five larva stations to compose the so-called Tuminubo section.

A sketch map No. 13 of the Tuminubo section and the programme for field work are presented in the following page.

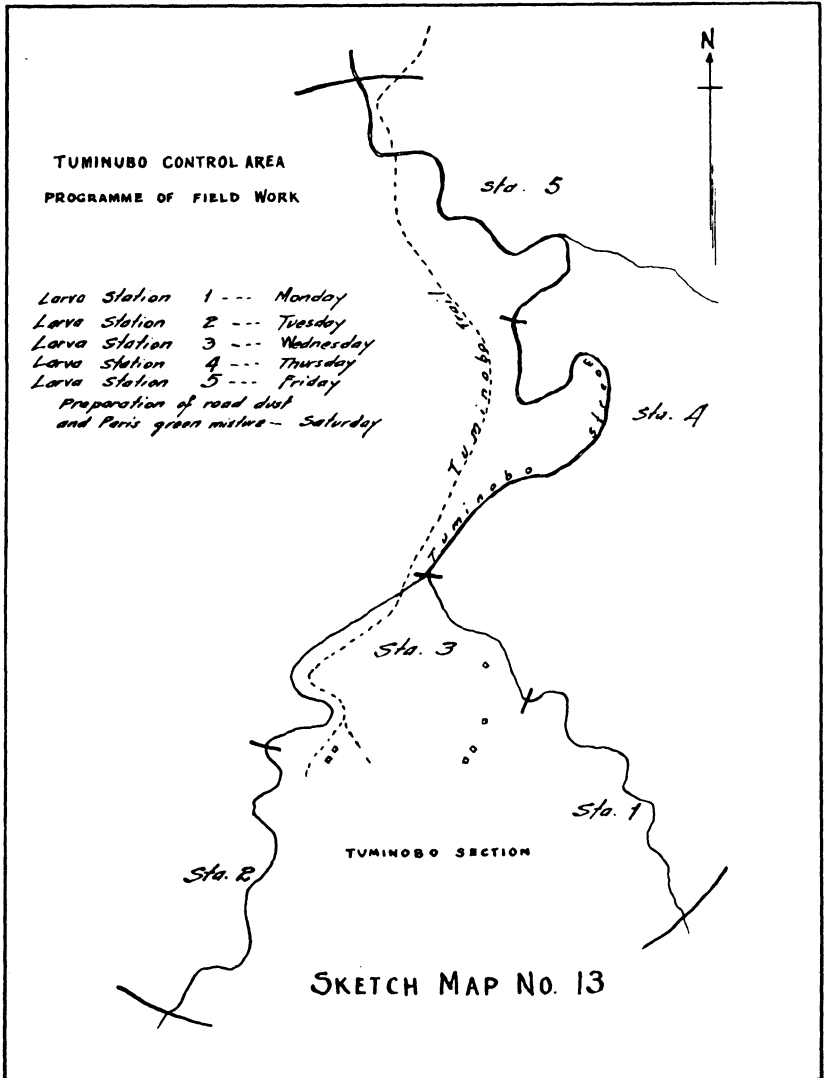
Having finished the work at the barrio of Tuminubo, the writer therefore closes up his malaria control survey and inquiry at Lanao, as the said barrio may be termed as the goal of the long and painstaking journey along the chain of malarious localities. Being invited and requested by the district health officer thereof, he left for Camp Keithley to deliver a lecture on Malaria with particular reference to the findings on malaria situation in Lanao before a gathering wherein the members of the provincial board of the said province were invited. The principal motive of the district health officer as revealed to the writer, in holding such gathering was to give malaria neces-

sary boosting in the locality, so that he could get necessary coöperation from the provincial authorities in the successful financial maintenance of the malaria control areas just established thereat. After the delivery of such lecture, the writer



submitted to the district health officer a written report of the findings in Lanao, attached to which were the sketch maps of the established control areas, and programmes of field work; and he further furnished the advice to the effect that for close

and efficient supervision the malaria control work at Lala, Rawan, Kolambugan and the Inclined and Kolasihan logging camps was to be under the immediate charge of the field director of the malaria control section, while that the Liangan and barrios



up to Tuminubo was to be looked after by the sanitary inspector of the province concerned, already trained in malaria field activities. Thus, of the 16 malaria control areas established in



the Province of Lanao, 9 were put under the immediate supervision of the former and 7 under the latter. A copy of the said written report to the district health office is attached herewith. The writer left the Province of Lanao from port Ilagan at 10 p. m. July 29, 1928, for the Bukidnon Agricultural School at Managok, Bukidnon, after staying for 29 days. He arrived at the place of destination at about 9 a. m. August 1st.

Immediately upon arrival at Bukidnon Agricultural School at Managok, the writer investigated the malaria situation of the place.

The place is on a fertile valley covering a wide track of land that is under cultivation and the main product of which is rice. Slow flowing, shallow, shaded, clear creeks, and irrigation ditches flow through it. The houses are generally of strong materials, although there are some nipa ones, which are more or less grouped together.

The population is marked at 300, composed of students and teachers. It is practically all male residents.

Regarding the data on malaria cases at the place, the principal of the school, Mr. Sabino Q. Ami, kindly furnished the writer the following:

1923 .....	13
1924 .....	10
1925 .....	12
1926 .....	9
1927 .....	14
1928 .....	12

The acting district health officer of Bukidnon and the writer examined the students at the agricultural school; and out of 140 students, 23 were found to be with varying degrees of splenic enlargements and 5 had blood films positive of malaria. The spleen and blood indices are therefore 16 per cent and 3.6 per cent, respectively. For further details regarding this matter, reference might be made to the table for spleen and blood indices attached herewith.

The writer was informed that malaria control work was being carried thereon already for some time following the instructions of Dr. Thomas Brennan former physician in charge of field unit No. 3. He, therefore, checked up the streams, in company with the principal, for the presence of anopheles larvæ; and there were collected 9 *A. minimus* and 3 *A. Barbirostris* from Balunkot-Capistrano Creek, and 19 *A. minimus* and 2 *A. Barbirostris* from Manogok-Alimanon Creek.

The control area was found to be rather small so that necessary extensions were duly considered. In view of the fact that there was no sketch map of the control area, and no programme for field control operations, necessary instructions along that line were given to the personnel taking charge of malaria control thereat to systematize the work for better and closer supervision.

The writer has deemed it wise to quote the demands of the principal of the said agricultural school who is earnestly desirous that such be duly and favorably considered by proper authorities:

We need a trained nurse to be assigned here.

We need an adequate supply of medicine.

At present we have no hospital. This building is a necessity here.

A sketch map No. 14 of the control area established thereat and a programme for field work are submitted in the following pages.

#### BUKIDNON AGRICULTURAL SCHOOL CONTROL AREA, PROGRAMME OF FIELD WORK

##### SECTION I—*Aboahan-Alimanon*

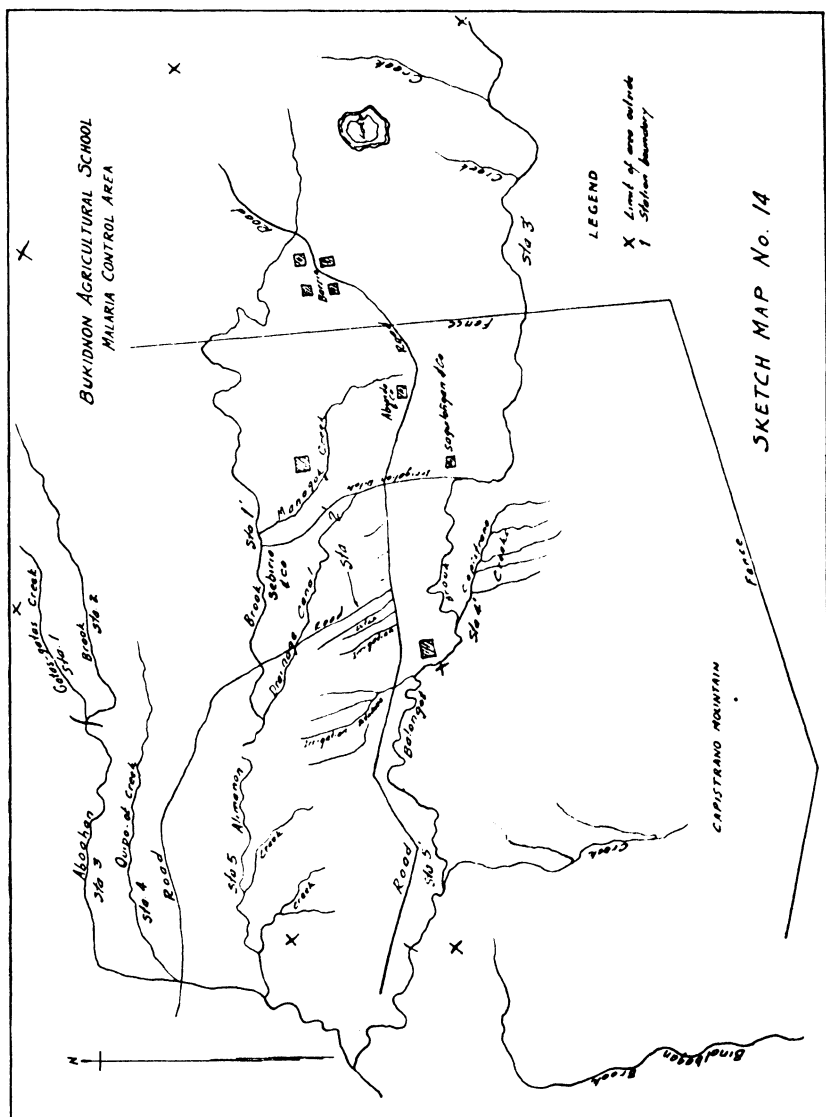
Larva Station 1 .....	Monday
Larva Station 2 .....	Tuesday
Larva Station 3 .....	Wednesday
Larva Station 4 .....	Thursday
Larva Station 5 .....	Friday
Preparation of road dust and Paris Green Mixture.....	Saturday

##### SECTION II—*Alimanon-Balongkot*

Larva Station 1 .....	Monday
Larva Station 2 .....	Tuesday
Larva Station 3 .....	Wednesday
Larva Station 4 .....	Thursday
Larva Station 5 .....	Friday
Preparation of road dust and Paris Green Mixture.....	Saturday

Having found out that there was no more to be done as the malaria control work previously established there needed only little reorganization for closer and better supervision, the writer left Managok at 7 p. m. August 1, 1928, and went to Cagayan, Misamis (with the intention to get the boat there for Jolo, Sulu). Arriving at this place at 3 p. m. August 2, 1928, not mentioning the delay encountered on the way.

Upon the request of the district health officer of Misamis, strengthened by his telegram to the Director of Health obliging the writer to stay for malaria survey and inquiry in the said



province, the writer therefore, made the needed survey at the barrios of Gusa and Cugman of some distance from Cagayan.

In the barrio of Gusa, there were stagnant pools and ditches found, where the water is generally turbid and the place, muddy. Nevertheless, checkings were made thereof only to find out that there was no anopheles breeding taking place. In a particular ditch further in the interior, which is naturally semi-stagnant, fairly clear water with plenty of debris and mostly shaded, there were collected 4 *A. minimus*, 17 *A. Barbirostris*, and 2 *A. Hyrcanus*.

In the barrio of Cugman, there were two anopheles breeding places found: From the Bigaan Creek, which is narrow, shallow flowing, shaded, with clear water, there were collected 20 anopheles larvæ identified to be 14 *A. minimus*, 4 *A. Barbirostris*, and 2 *A. Hyrcanus*.

From the Bigaan River which is moderately wide, shallow, partly shaded, with flowing clear water, there were collected 29 anopheles larvæ, identified to be 10 *A. minimus*, 17 *A. Barbirostris* and 2 *A. Hyrcanus*.

Spleen and blood surveys were made in the public schools of the two barrios. In the public school at Gusa, out of 30 children examined there was only one that was found with enlarged spleen; and likewise there was only one that had blood positive of malaria. These findings, therefore, give 3 per cent for spleen index and 3 per cent for blood index. In the public school at Cugman, out of 29 children examined, there were three with spleen enlargements, and two with blood positive of malaria. These figures therefore give 10 per cent for spleen index and 6.9 per cent for blood index. For further details regarding these spleen and blood surveys, reference might be had to the table of Spleen and Blood Indices presented herein elsewhere.

Judging from the foregoing findings of the surveys and from the information gathered, that malaria cases thereof are not frequent, the writer is of the opinion that malaria in those places surveyed is not much of a problem. However, since there are *A. minimus* breeding thereat and the district health officer claims that his office can handle the malaria control work thereat, advices regarding the places to be put under control and further instructions on malaria work were furnished the health authority concerned.

Having finished the work that he was required to do, he left Cagayan, Misamis, at 9 p. m. August 6, 1928, and arrived

at Jolo, Sulu, at 7.30 a. m. August 14, 1928, taking the first and only available transportation.

Soon after arrival at Jolo, the writer investigated the workings of malaria control that was being carried out there by the regular health personnel. It was found out that there was no organization that particularly handles the malaria control work thereat. Such control work was only supplementary, so to speak, to the regular routine sanitation work; and the sanitary inspector supervising the control work is also charged with other duties.

Checking up of the anopheles breeding places of malarious localities in the different islands of the Sulu Province was carried out systematically as follows:

#### I. JOLO ISLAND

(a) In and around the town of Jolo the following streams or bodies of water were surveyed and checked up for the presence of anopheles larvae.

1. In Liguan Creek, which is flowing, clear, shallow and in parts partly shaded, there were collected 36 anopheles larvæ and identified to be 29 *A. minimus*, 3 *A. Barbirostris*, and 4 *A. Rossii* (*vagus*). It was found out that the limit of the control area going up stream was near to the group of houses; so much was duly extended.

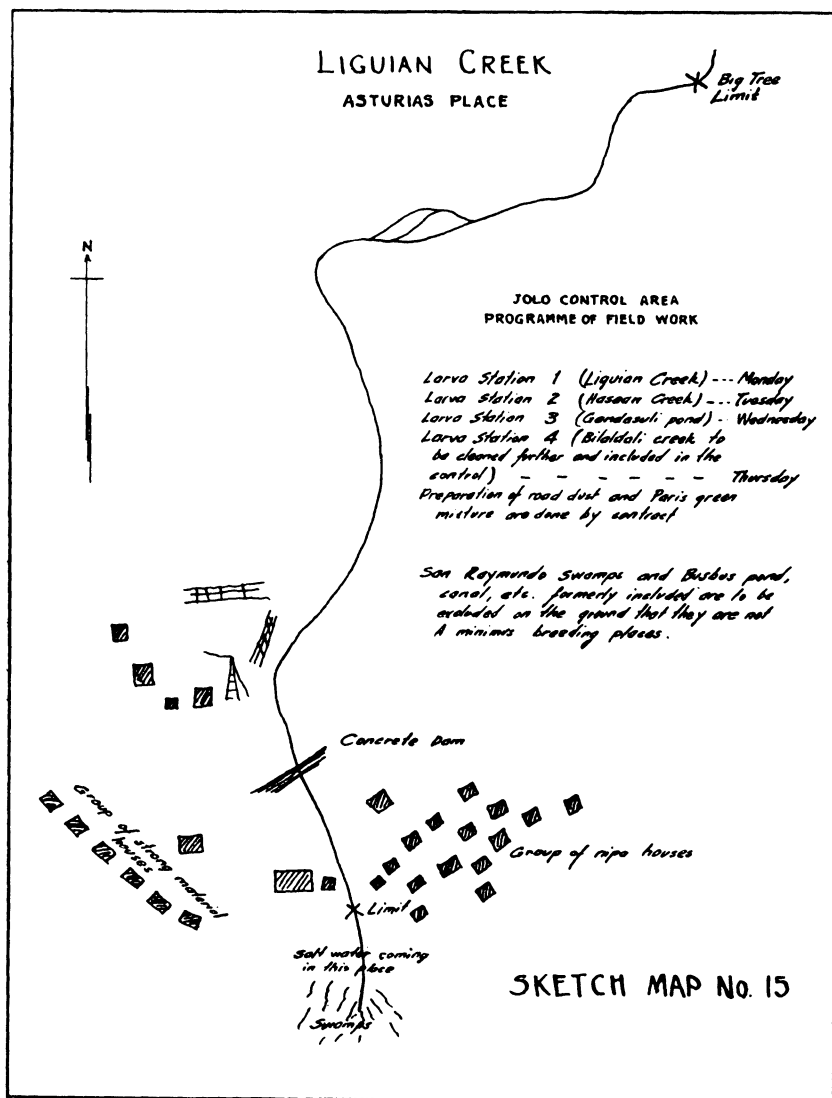
2. In Hasaan Creek, which is flowing, generally clear although in parts turbid, shallow and narrow, there were collected 9 anopheles larvæ and identified to be all *A. minimus*. In this stream, the limits of the control were found to be satisfactory.

3. In Gandasuli Stream, which, in its proximal part simulates an elongated pond where quipo and other vegetations thrive luxuriantly, while distally assumes slow, flowing clear, shallow creek, there were collected 49 anopheles larvæ identified to be 22 *A. minimus*, 22 *A. Barbirostris*, 2 *A. Ludlowii*, and 3 *A. Hyrcanus*. In this stream, the control limit going down was found to be near the group of houses and so due extension was made as required by proper malaria control area.

4. In Bilaldali Creek which is slowly flowing, clear, mostly under shade, shallow, moderately narrow and in parts rather impassable because of thick shrubs, bushes, etc., there were collected 35 anopheles larvæ and identified to be 28 *A. minimus*, 5 *A. Barbirostris*, and 2 *A. Rossii*. *A. Rossii* larvæ were found in the marshy place somewhere along the course of the stream. This creek was not under control, although it lies within the established control area; proper survey of it was therefore made for it was to be included in the revised control area. It might not be amiss to mention that in this stream, there are said to roam some crocodiles; but fortunately none was seen in the survey.

5. San Raymundo swamps which were at the time of the survey under the control work have been checked up for the presence of anopheles larvæ and there were collected 22 *A. Rossii* (*vagus*), 39 *A. Ludlowii*, 3 *A.*

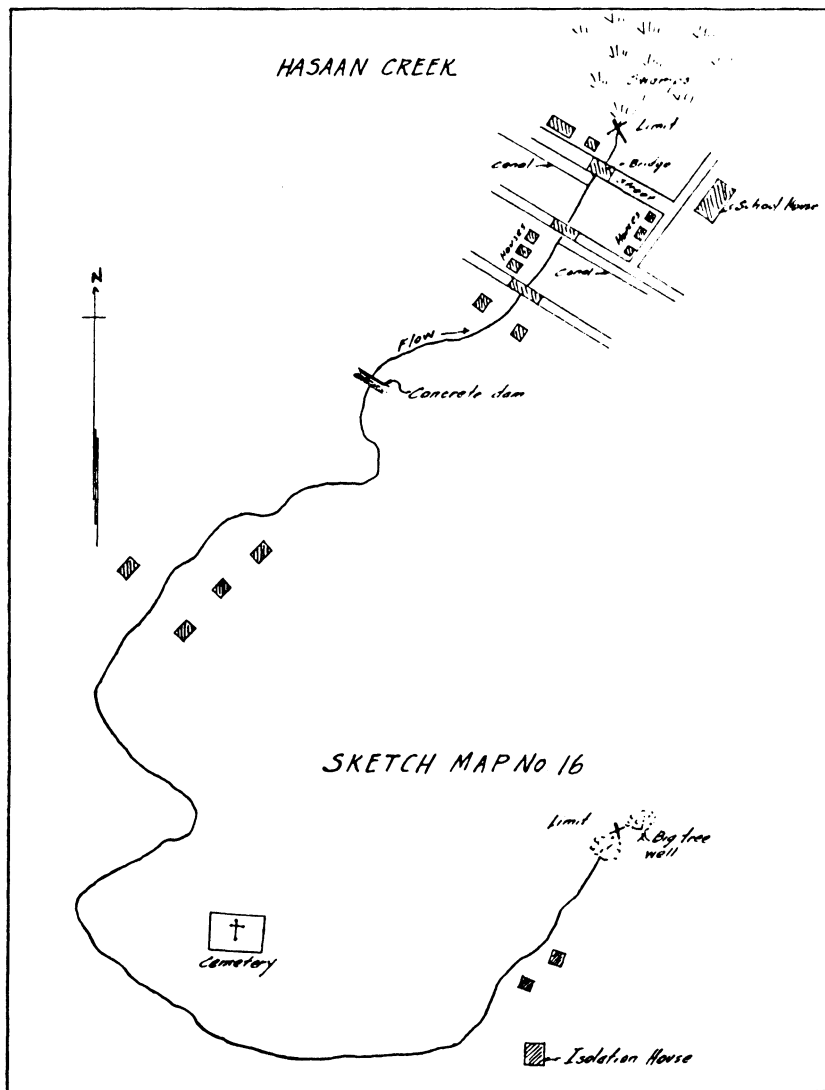
Barbirostris and 2 Aitkeni (type I). The place, as the name implies, covers an extensive muddy area where water stagnates and vegetations are luxuriant. In view of the fact that this place is not an *A. minimus* breeding place and in due adherence to the species control policy, the writer advised the district health officer thereof to exclude it from those under control work.



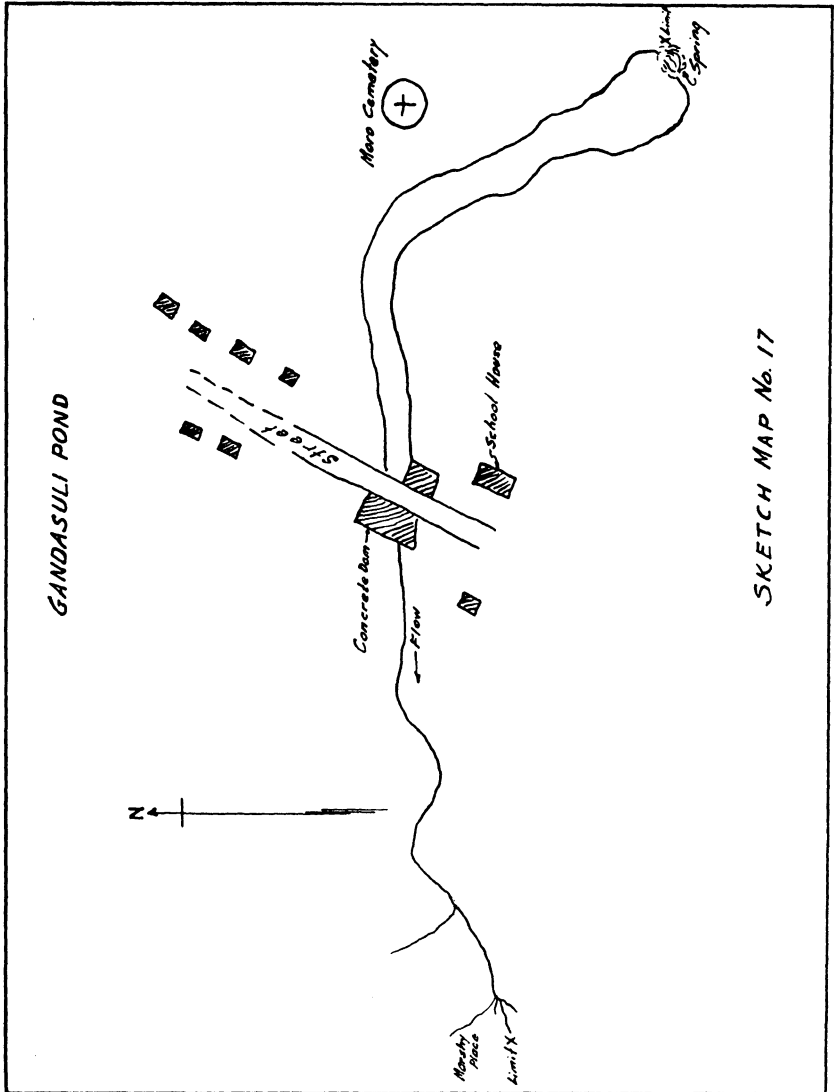
6. The Busbus pond, swamp and canal, which were under control work, were surveyed to find only no anopheles breeding thereof. Inasmuch as they do not present the characters of *A. minimus* breeding places, the

writer advised the district health officer to abandon the work thereat if their aim was to control malaria.

The sketch maps Nos. 15, 16, 17, 18 and 19 of the streams in and around Jolo town surveyed and checked up for the presence

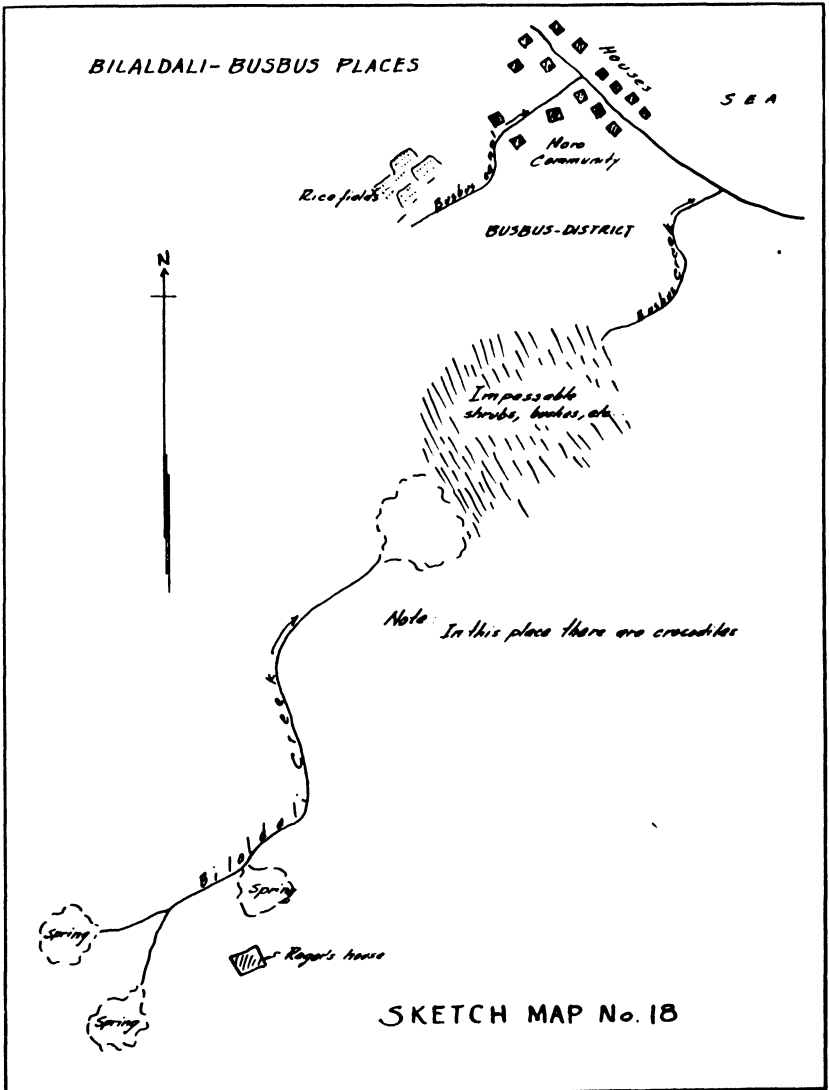


of anopheles larvæ and to be included in the reorganized control areas are presented in the following pages and the programmes of work thereof.





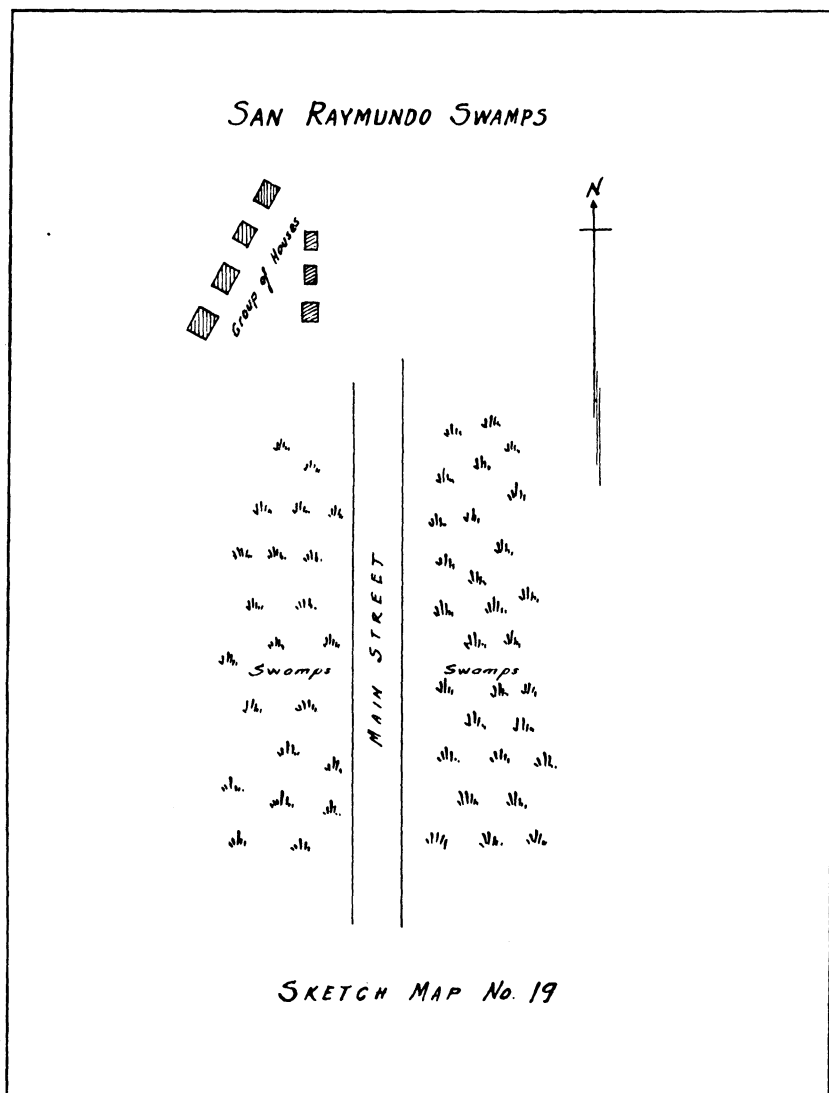
Examination of 46 school children in the town of Jolo has revealed that 4 have enlarged spleens and 3 have blood films positive of malaria, thus resulting to 8.7 per cent spleen index



and 6.5 per cent blood index. For further details regarding this spleen and blood survey, reference might be made to the tables for Spleen and Blood Indices.

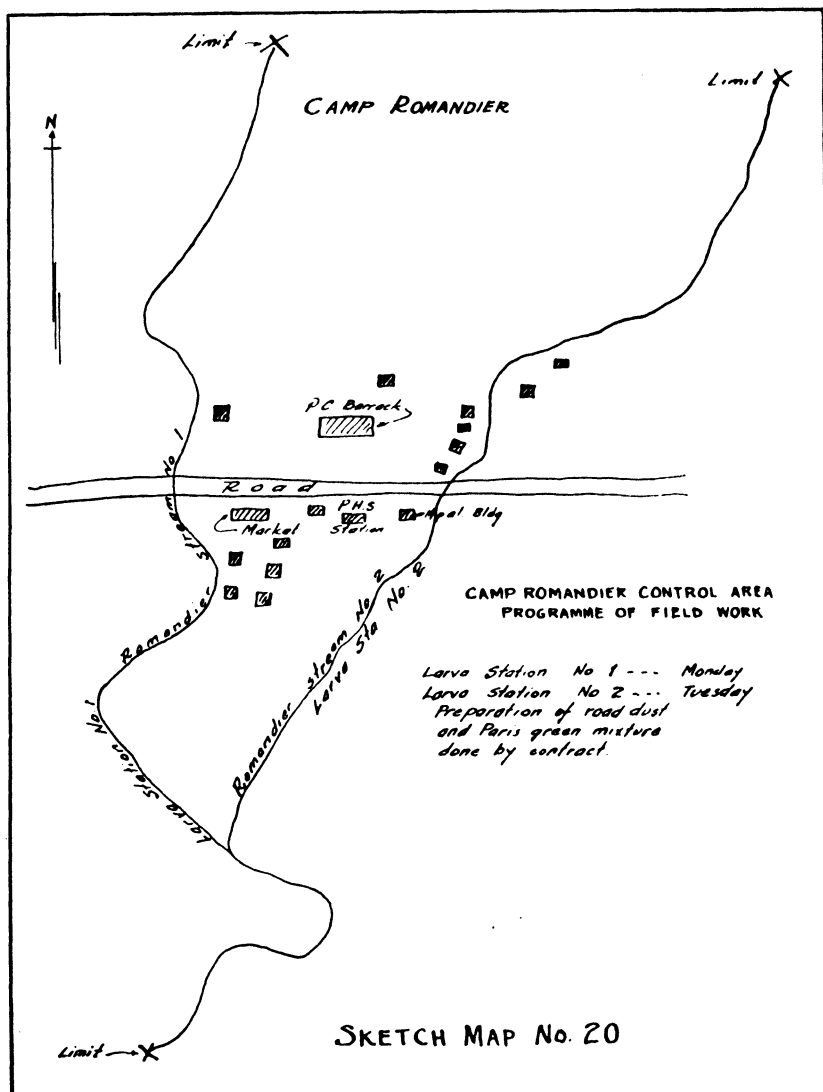
(b) In Camp Romandier, the following streams were surveyed and checked up for the presence of anopheles larvæ:

1. In Romandier Stream No. 1, which is flowing, clear, shaded and shallow, there were collected 21 *A. minimus* and 1 *A. Barbirostris*.



2. In Romandier Stream No. 2, which is also flowing, clear, not generally shaded and a branch of the aforementioned stream, there were collected 22 *A. minimus* and 2 *A. Barbirostris*.

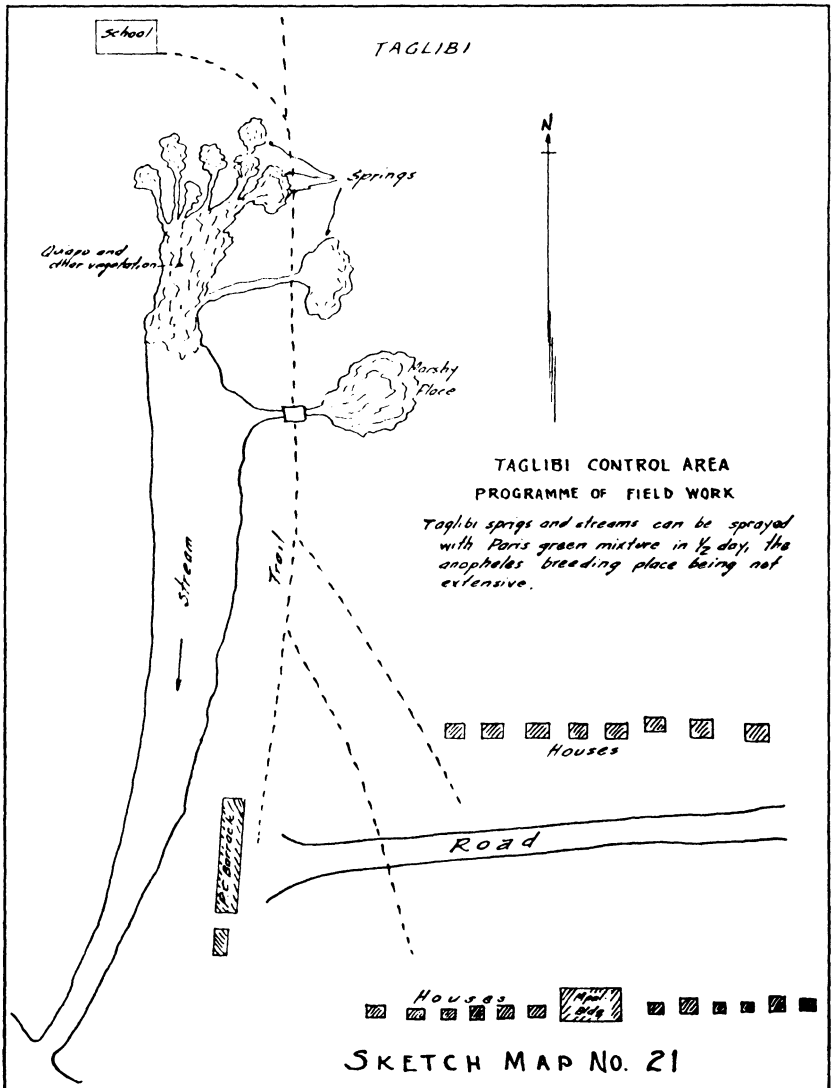
The control work at this camp was not being carried properly, judging from the heavy anopheles breeding that was noted in those streams. Necessary instructions were given to the one in charge of the work thereat.



A sketch map No. 20 with a programme of field work is presented in the following page, showing the proposed control area and scheme of field activity.

(c) In Taglibi camp, the springs and stream constitute the anopheles breeding places.

In the Taglibi springs and stream, where the water is flowing, clear, partly covered by quiapo and other aquatic plants, there were collected 66 *A. minimus* and 13 *A. Barbirostris*.



The prolific anopheles breeding noted thereat is not surprising, in so far as the place is not under malaria control work.

Judging from the malaria cases being registered at the said place and from the presence of *A. minimus* therein, the writer advised the district health officer to include it in malaria control activity.

A sketch map No. 21 with programme of field work are presented in the succeeding page to show the malaria control organization thereof.

(d) In Indanan district, a stream was checked up for the presence of anopheles larvæ and there were collected 14 *A. minimus*, 1 *A. Barbirostris*, and 1 *A. Hyrcanus*.

## II. SIASI ISLAND

(a) In the town of Siasi, there were found no *A. minimus* breeding place. And of the 291 school children examined there were only 5 that showed moderately enlarged spleen, thus resulting to 1 per cent spleen index. Considering this result and the fact that malaria is practically unknown to the people thereof, the idea of getting blood smears was abandoned.

(b) In Cabbon district, a survey of the place only revealed a small seepage not far from the school house, which is practically nil as anopheles breeding place. From this seepage there were collected 2 *Ludlowii* and 2 *Rossii* (*vagus*). The houses of the district are very much scattered out very far distant to each other. Out of 91 school children, there were only 8 manifested splenic enlargements, thus resulting to 8 per cent spleen index.

## III. TAWI-TAWI ISLAND

Bato-bato colony is located on the southern coast of Tawitawi Island. It is hilly with seepages, and inhabited mostly by christians encouraged by the Government to develop the land thereof. The population is roughly estimated to be around 250.

Malaria survey of the said colony reveals some promising indications that malaria incidence thereat can be minimized, not to say eradicated, if control measures could only be free of any shortcoming and therefore be strictly adhered to. The actual colony site and an area almost surrounding it of about  $1\frac{1}{2}$  kilometers (and in places much more) radial extensions from the suburb houses on the east, north and west sides (south side corresponding sea) have been covered looking for anopheles breeding places. It is pleasing to state that within the established limits of the control area, excepting three seepages, practically all creeks are dry as none of them depends upon spring

for water but upon rain. And informations gathered from the colonists point out to the effect that once or twice a year all creeks in and around the colony dry out. This drying of all creeks is as great help of nature to the malaria control work thereof in the sense that when the creeks get dry, all anopheles breeding is coincidentally stopped; and no anopheles propagation can take place. The burden of control measures is therefore only shouldered during rainy season when newly created streams appear and become breeding places. If during rainy season, the streams could only be kept well under control until they dry out, the malaria vector, in the course of time if not eradicated, would be practically insignificant thereof. A particular spot on a creek bed at Fajardo's homestead is not completely dry yet and 3 *A. Barbirostris* larvæ were collected. In the seepage from a well at Narboneta's homestead, which flows only to a very short distance and then absorbed by the soil, there were collected 6 *A. minimus* (typical) larvæ. In the seepage (Cruz's seepage No. 1) from a well near Cruz's house, that flows also to a short distance and then stagnates, there were collected, 5 *A. Rossii* (*vagus*) larvæ. In another seepage at Cruz homestead (Cruz's seepage No. 2), that flows to a longer distance, there were collected 13 *A. minimus* (typical) and 3 *A. Barbirostris* larvæ. The aforementioned seepages are of short extensions and can be easily handled. Considering the above findings, the writer is of the opinion that if the present system of malaria control, which is bent on attacking the malaria vectors, is really effective, Bato-bato colony is the place wherein it can be palpably demonstrated that there is such a thing as malaria control.

In this connection, it is deemed wise to state that Dr. Jose de las Peñas, president of sanitary division of the place was with the writer in the surveys of the creeks and establishment of the control area; and I gave him all advices necessary in the control work thereof.

Spleen and blood surveys were done on the school children and on the colonists at Bato-bato. Of the 65 school children examined, 50 had enlarged spleens of varying degrees and 25 had blood films positive of malaria; thus resulting to 77 per cent spleen index and 38.5 per cent blood index. Of the 81 colonists examined 36 had varying degrees of splenic enlargements. Only 70 of these colonists submitted to blood test out of which 17 had blood films positive of malaria. These figures

therefore give 44 per cent spleen index and 24.3 per cent blood index.

A sketch map No. 22 of the control area established at Bato-bato colony is presented in the following page. No larva stations can be established in view of the fact that all creeks are practically dry. The two seepages, where *A. minimus* (typical) larvæ were collected, are of short extensions and can be easily and thoroughly put under control by one field laborer. However, when newly created streams appear and show some *A. minimus* breeding Doctor Peñas has already been advised what to do.

#### IV. BUNGAO ISLAND

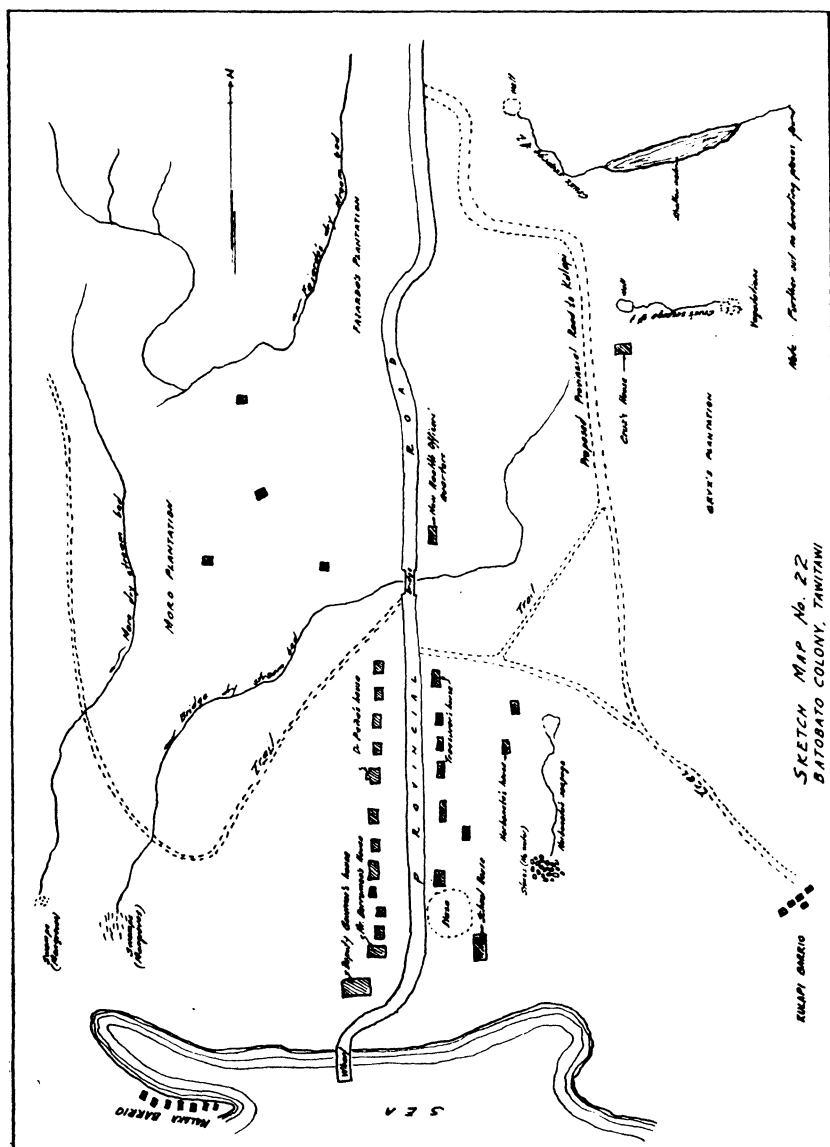
The town of Bungao is located on the northeastern part of the island of the same name. It is hilly and rocky, with dry creek beds. There is no spring so that the place wholly depends upon rain for fresh water. Its population is approximately around 300 and composed mostly of moros.

The town and its surroundings have been duly surveyed and anopheles breeding places were looked for. There was no breeding place found; creek beds or seepage places were dry at the time of the survey; and malaria cannot be a problem then and there.

All of these that could be gotten hold of and willing to submit, were examined for enlarged spleens; and blood films were taken from them. Of the 32 inhabitants (mostly children) that were examined, 4 had splenic enlargements, and 6 had blood films positive for malaria parasites; thus resulting to 12.5 per cent for spleen index and 18.8 per cent for blood index. Detailed data pertaining to this examination may be had from the Table of Spleen and Blood Indices attached herewith.

Four malaria control areas in the Sulu Province corresponding to the town of Jolo, Camp Romandier, Camp Taglibi Springs, and Bato-bato colony have been inspected and reorganized. And upon completion of such mission, the writer reported the findings thereof to the district health officer, a copy of which report is attached herewith.

Having finished the malaria surveys and reorganization and establishment of control areas in the Sulu Province, the writer left Jolo, at 8 p. m. August 29, 1928, after staying in the Sulu Province for about 16 days, and arrived at Manila 5 p. m. September 3, 1928.





## SUMMARY

## I. LANA O

(a) Malaria control field operations in field unit No. 3 with station at Kolambugan, Lanao, have been completely reorganized and duly extended. Five control areas corresponding to Kolambugan district, Inclined Logging Camp, Kolasihan Logging Camp, Lala and Rawan have been put under the immediate supervision of the field director of the Division of Malaria Control. Seven control areas corresponding to Liañgan, Binuni, Lupagan, Libertad, Samboron-Magoong-Lulubañgon, Mimbalot and Tuminubo have been entrusted to the regular health personnel of Lanao for immediate supervision.

(b) Anopheles species found in the survey and establishment of the aforementioned control areas are as follows: *A. minimus* (typical); *A. maculatus*; *A. Barbirostris*, *A. Hyrcanus*; *Rossii* (vagus); *Rossii* (subpictus); *A. "white banded"* (new species); *A. Aitkeni* (type I); *A. Aitkeni* (type II); *A. Ludlowii*; *A. Umbrosus*, larvæ of the new species have been bred out for further study.

(c) The authorities of the Kolambugan Lumber and Development Company and also the provincial authorities of Lanao have shown particular interest in malaria control and willingness to coöperate.

(d) Spleen and blood indices of the school children in the different malarious localities in the Province of Lanao are as follows:

Kolambugan	.....	{ 8.7% Spleen 2.4% Blood
Liañgan	.....	{ 37.2% Spleen 16.3% Blood
Binuni	.....	{ 42.2% Spleen 20% Blood
Libertad	.....	{ 44% Spleen None Blood
Samboron	.....	{ 46.4% Spleen 14.2% Blood
Buruun	.....	{ 24.3% Spleen 16.2% Blood

## II. BUKIDNON

(a) The malaria control work at Bukidnon Agricultural School has been completely reorganized and the control area has been duly extended.

(b) The species of anopheles larvæ collected therefrom are *A. minimus* (typical) and *A. Barbirostris*;

(c) The school authorities and students are shouldering the control work thereof, and are demanding that they be granted the services of a trained nurse to insure the efficient care of their patients and adequate supply of medicine.

(d) Spleen and blood indices of the college students are 16 per cent spleen and 3.6 per cent blood.

### III. MISAMIS

(a) Malaria survey of the barrios (Gusa and Cugman) of Cagayan de Misamis, reveals that in their creeks and river there are breeding *A. minimus* (typical); *A. Barbirostris*; and *A. Hyrcanus*; and that judging from spleen and blood indices, the places are not so malarious as they were supposed to be.

(b) The district health officer thereof has already been advised as to what to be done in malaria control work in those places, in case the municipal authorities give fund for the support of such work.

(c) Spleen and blood indices of the two malarious barrios of Cagayan de Misamis, namely, Gusa and Cugman, are as follows:

Gusa .....	{ 3% Spleen
	{ 3% Blood
Cugman .....	{ 10% Spleen
	{ 6.9% Blood

### IV. SULU PROVINCE

(a) The malaria control field activity in the Sulu Province has been completely reorganized; and there have been put up on a sound basis 4 control areas. Bodies of water that are not *A. minimus* breeding places and being previously attended to have been dropped out of the control work; and in their stead streams that are *A. minimus* breeding places and were not being previously attended to have been put under control. The control areas have been duly extended. In Bato-bato colony which is markedly malarious, much could be done in malaria incidence in so far as there are exceedingly few breeding places thereat, and the vectors can be materially reduced in the course of time through the present system of control work.

(b) The species of *Anopheles* larvæ collected in the survey and establishment of control areas in Sulu Province are as follows: *A. minimus* (typical); *A. Barbirostris*; *A. Hyrcanus*; *A. Ludlowii*; *A. Rossii* (vagus).

(c) Spleen and blood indices of children and adults of different malarious places in the Sulu Province are presented as follows:

Jolo .....	{	8.7% Spleen
	{	0.5% Blood
Bato-bato .....	{	77% Spleen
(school children)	{	39.5% Blood
Bato-bato (colonists) .....	{	44% Spleen
	{	24.3% Blood
Bungao .....	{	12.5% Spleen
	{	18.8% Blood

*Table presenting spleen and blood indices and showing degrees of spleen enlargements and type of malaria in age groups*

PUBLIC SCHOOL AT KOLAMBUGAN, LANAOS

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		62	128		190	Neg.....		67	136		203
1.....		4	6		10	B. T.....		1	4		5
2.....			4		4	M. T.....					
3.....		2	1		3	B. Q.....					
4.....			1		1	Mixed.....					
Total.....		68	140		208	Total.....		68	140		208

Total population surveyed, 208.

Percentage of enlarged spleen, 8.7 per cent.

Percentage of positive blood, 2.4 per cent.

PUBLIC SCHOOL AT LIANGAN, LANAOS

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		18	9		27	Neg.....		20	16		36
1.....		1	3		4	B. T.....		1	3		4
2.....			3		3	M. T.....			3		3
3.....		1	5		6	Q. T.....					
4.....		1	2		3	Mixed.....					
Total.....		21	22		43	Total.....		21	22		43

Total population surveyed, 43.

Percentage of enlarged spleen, 37.2 per cent.

Percentage of positive blood, 16.3 per cent.

NOTES:

Spleen sizes are graded by figures to mean as follows:

Figure 0 is when the spleen is not palpable.

Figure 1 is when the spleen border is about, or just coming out of, the costal margin.

Figure 2 is when the spleen border is between the costal margin and umbilicus.

Figure 3 is when the spleen border reaches the umbilicus.

Figure 4 is when the spleen border passes beyond the umbilicus.

Blood results are represented by letters to mean as follows:

Neg.=Negative of malaria.

B. T.=Benign tertian.

M. T.=Malignant tertian.

B. Q.=Benign quarter.

Mixed=Mixed benign tertian and malignant tertian.

*Table presenting spleen and blood indices and showing degrees of spleen enlargements and type of malaria in age groups—Continued*

## PUBLIC SCHOOL AT BINUNI, LANA O

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		11	15		26	Neg.....		17	19		36
1.....		4	4		8	B. T.....		3	5		8
2.....		3	2		5	M. T.....		1			1
3.....		2	1		3	B. Q.....					
4.....		1	2		3	Mixed.....					
Total...		21	24		45	Total...		21	24		45

Total population surveyed, 45.  
 Percentage of enlarged spleen, 42.2 per cent.  
 Percentage of positive blood, 20 per cent.

## PUBLIC SCHOOL AT LIBERTAD, LANA O

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		13	1		14	Neg.....		15			15
1.....		6	1		7	B. T.....					
2.....		3			3	M. T.....					
3.....		1			1	B. Q.....					
4.....						Mixed.....					
Total...		23	2		25	Total...		15			15

Total population surveyed, 25.  
 Percentage of enlarged spleen, 44 per cent.  
 Percentage of positive blood, note 10 slides oxidized hard to look for parasites.

## PUBLIC SCHOOL AT SAMBORON, LANA O

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		12	3		15	Neg.....		20	4		24
1.....		7			7	B. T.....		1			1
2.....		4	1		5	M. T.....		3			3
3.....		1			1	B. Q.....					
4.....						Mixed.....					
Total...		24	4		28	Total...		24	4		28

Total population surveyed, 28.  
 Percentage of enlarged spleen, 46.4 per cent.  
 Percentage of positive blood, 14.3 per cent.

## NOTES:

Spleen sizes are graded by figures to mean as follows:

Figure 0 is when the spleen is not palpable.

Figure 1 is when the spleen border is about, or just coming out of, the costal margin.

Figure 2 is when the spleen border is between the costal margin and umbilicus.

Figure 3 is when the spleen border reaches the umbilicus.

Figure 4 is when the spleen passes beyond the umbilicus.

Blood results are represented by letters to mean as follows:

Neg.=Negative of malaria.

B. T.=Benign tertian.

M. T.=Malignant tertian.

B. Q.=Benign quarter.

Mixed=Mixed benign tertian and malignant tertian.

*Table presenting spleen and blood indices and showing degrees of spleen enlargements and type of malaria in age groups—Continued*

## PUBLIC SCHOOL AT BURUUN, LANAO

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0		22	6		28	Neg.		24	7		31
1		4	1		5	B. T.		4			4
2		4			4	M. T.		2			2
3						B. Q.					
4						Mixed					
Total		30	7		37	Total		30	7		37

Total population surveyed, 37.

Percentage of enlarged spleen, 24.3 per cent.

Percentage of positive blood, 16.2 per cent.

## BUKIDNON AGRICULTURAL SCHOOL, MANAGOK, BUKIDNON

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0			72	45	117	Neg.			90	45	135
1			12	4	16	B. T.				1	1
2			4		4	M. T.			1	3	4
3			1		1	B. Q.					
4			2		2	Mixed					
Total			91	49	140	Total			91	49	140

Total population surveyed, 140.

Percentage of enlarged spleen, 16 per cent.

Percentage of positive blood, 3.6 per cent.

## PUBLIC SCHOOL AT GUSA, CAGAYAN, MISAMIS

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0		26	3		29	Neg.		25	4		29
1					1	B. T.					
2						M. T.		1			1
3						B. Q.					
4						Mixed					
Total		26	4		30	Total		26	4		30

Total population surveyed, 30.

Percentage of enlarged spleen, 3 per cent.

Percentage of positive blood, 8 per cent.

## NOTES:

Spleen sizes are graded by figures to mean as follows:

Figure 0 is when the spleen is not palpable.

Figure 1 is when the spleen border is about, or just coming out of, the costal margin.

Figure 2 is when the spleen border is between the costal margin and umbilicus.

Figure 3 is when the spleen border reaches the umbilicus.

Figure 4 is when the spleen passes beyond the umbilicus.

Blood results are represented by letters to mean as follows:

Neg.=Negative of malaria.

B. T.=Benign tertian.

B. Q.=Benign quarter.

Mixed=Mixed benign tertian and malignant tertian.

*Table presenting spleen and blood indices and showing degrees of spleen enlargements and type of malaria in age groups—Continued*

PUBLIC SCHOOL AT CUGMAN, CAGAYAN, MISAMIS

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		22	4		26	Neg.....		22	5		27
1.....		1			1	B. T.....					
2.....		1	1		2	M. T.....		1			1
3.....						B. Q.....					
4.....						Mixed.....		1			1
Total...		24	5		29	Total....		24	5		29

Total population surveyed, 29.  
 Percentage of enlarged spleen, 10 per cent.  
 Percentage of positive blood, 6.9 per cent.

PUBLIC SCHOOL AT JOLO, JOLO ISLAND

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		19	23		42	Neg.....		18	25		43
1.....		1			1	B. T.....		1	1		2
2.....			2		2	M. T.....			1		1
3.....			1		1	B. Q.....					
4.....						Mixed.....					
Total...		20	26		46	Total....		19	27		46

Total population surveyed, 46.  
 Percentage of enlarged spleen, 8.7 per cent.  
 Percentage of positive blood, 6.5 per cent.

PUBLIC SCHOOL AT BATO-BATO, TAWITAWI ISLAND

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		3	12		15	Neg.....		10	30		40
1.....		5	11		16	B. T.....		7	9	1	17
2.....		5	11		16	M. T.....		1	4		5
3.....		2	7		9	B. Q.....					
4.....		2	7		9	Mixed.....			3		3
Total...		17	48		65	Total....		18	46	1	65

Total population surveyed, 65.  
 Percentage of enlarged spleen, 77 per cent.  
 Percentage of positive blood, 38.5 per cent.

NOTES:

Spleen sizes are graded by figures to mean as follows:

Figure 0 is when the spleen is not palpable.

Figure 1 is when the spleen border is about, or just coming out of, the costal margin.

Figure 2 is when the spleen border is between the costal margin and umbilicus.

Figure 3 is when the spleen border reaches the umbilicus.

Figure 4 is when the spleen passes beyond the umbilicus.

Blood results are represented by letters to mean as follows:

Neg.=Negative of malaria.

B. T.=Benign tertian.

B. Q.=Benign quarter.

Mixed=Mixed benign tertian and malignant tertian.

*Table presenting spleen and blood indices and showing degrees of spleen enlargements and type of malaria in age groups—Continued*

**BATO-BATO (COLONISTS) TAWITAWI ISLAND**

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....	12	3	3	27	45	Neg.....	12	4	5	32	53
1.....	4	1	1	8	14	B. T.....	2	2		9	13
2.....	2	3	3	11	19	M. T.....				2	2
3.....	2			1	3	B. Q.....			1		1
4.....						Mixed.....	1				1
Total...	20	7	7	47	81	Total..	15	6	6	43	70

Total population surveyed, 81 (spleens) 70 (blood).

Percentage of enlarged spleen, 44 per cent.

Percentage of positive blood, 24.3 per cent.

**BUNGAO, BUNGAO ISLAND (CHILDREN AND SOME ADULTS)**

Spleen sizes	Age (in years)				Total	Blood	Age (in years)				Total
	1-4	5-9	10-19	20+			1-4	5-9	10-19	20+	
0.....		15	10	3	28	Neg.....		13	10	3	26
1.....						B. T.....		5	1		6
2.....		1	1		2	M. T.....					
3.....		1	1		2	B. Q.....					
4.....						Mixed.....					
Total...		17	12	3	32	Total..		18	11	3	32

Total population surveyed, 32.

Percentage of enlarged spleen, 12.5 per cent.

Percentage of positive blood, 18.8 per cent.

**NOTES:**

Spleen sizes are graded by figures to mean as follows:

Figure 0 is when the spleen is not palpable.

Figure 1 is when the spleen border is about, or just coming out of, the costal margin.

Figure 2 is when the spleen border is between the costal margin and umbilicus.

Figure 3 is when the spleen border reaches the umbilicus.

Figure 4 is when the spleen border passes beyond the umbilicus.

Blood results are represented by letters to mean as follows:

Neg.=Negative of malaria.

B. T.=Benign tertian.

M. T.=Malignant tertian.

B. Q.=Benign quarter.

Mixed=Mixed benign tertian and malignant tertian.

*July 19, 1928*

**To: The MANAGER, KOLAMBUGAN LUMBER AND DEVELOPMENT COMPANY  
KOLAMBUGAN, LANA O**

**Subject: MALARIA CONTROL**

1. Please be advised that we have done thorough and detailed surveys of the streams in the Inclined Logging Camp, Kolasihan Logging Camp, and Kolambugan; and we have found out that most of them are breeding places of anopheles minimus, a dangerous malaria vector. In view of this finding, it is suggested that a thorough and detailed malaria control

work be established in those localities concerned to materially reduce the malaria incidence thereof.

2. To properly carry on the malaria control on a sound basis, it has been painstakingly studied that at least seven laborers are needed; and these are to be distributed as follows: two in the Inclined Logging Camp, two in the Kolasihan Logging Camp, and three in the Kolambugan locality. It is suggested that for the purpose of economy, the laborers in the said logging camps be put under the immediate charge of the dispensary attendants, therein to do away with the services of the capataces, with the understanding that our field director will visit now and then those places for technical supervision. The laborers in Kolambugan will be under the immediate charge of the field director himself to be assisted by the sanitary inspector of the locality. It is earnestly hoped that you will grant the services of seven laborers to take up the work on malaria control and the forthcoming success will therefore redound to your good and unconditional coöperation.

3. We beg to request you that the building of any new logging camp be anticipated at least six months prior to settlement to our field directors, so that he can start the malaria control work therein and make the place therefore practically free of malaria vector before the people come in to live. Be it understood of course that malaria control work can be started only after a thorough survey of the streams, which warrants the establishment of such control work.

ANTONIO EJERCITO

*Assistant Chief, Division of Malaria Control Work*

[TRUE COPY]

*July 27, 1928*

*To: The DISTRICT HEALTH OFFICER, Dansalan, Lanao*

*Subject: MALARIA CONTROL IN LANA O*

1. After overcoming all hardships and obstacles, and pushing the surveys to a successful finish, the undersigned has the honor to submit to you herewith sketch maps and the corresponding working programmes for Paris green spraying needed in the establishment of malaria control areas at Lala, Rawan, Kolambugan and its Logging Camps, Liañgan, Libertad, Samboron, Magoon-Lulubañgon, Mimbalot and Tuminubo. The said maps and programmes are self-explanatory, so that further explanation is perhaps out of place. However, it might be stated that such have been painstakingly prepared to serve you in your systematic supervision on the malaria control work in your province.

2. Blood and spleen surveys on school children along the coast from Kolambugan to Iligan, where malaria is rampant, have been taken up, and the results of same will be sent to you as soon as the blood films have been examined at the Malaria Control Laboratory.

(Sgd.) ANTONIO EJERCITO

*Assistant Chief, Division of Malaria Control*

[TRUE COPY]



August 28, 1928

To: The DISTRICT HEALTH OFFICER, *Jolo, Sulu*

Subject: MALARIA INQUIRY AND CONTROL

1. I have the honor to submit herewith the results of my investigations of the different malarious places in your province, to which you particularly called my attention, and necessary advices therefor:

(a) *Jolo Island*—

1. In Liguian Creek of the anopheles larvæ collected, 80 per cent were minimus (typical), 8 per cent were Barbirostris, and 12 per cent were Rossii (vagus). Rossii larvæ were found in stagnant water. It has been found out that the limit of your control going up stream was short so such was extended as may be noted in the sketch map.

2. In Hasaan Creek, the larvæ collection was composed of all minimus (typical). In this stream the limits of the control were found to be satisfactory; and a sketch map is submitted for record.

In Gandasulu Stream of the larvæ collection, 45 per cent were minimus (typical), 45 per cent were Barbirostris, 6 per cent were Hyrcanus, and 4 per cent were Ludlowii. In this stream the limit going down was found to be short and so due extension was made as may be appreciated in the attached sketch map.

4. In Bilaldali Stream of the larvæ collection made therein, 80 per cent were minimus (typical), 14 per cent were Barbirostris, and 6 per cent Rossii (vagus). Rossii were found in the marshy place somewhere along the course of the stream. This stream is not included in your present control; and therefore please be advised that such be included in view of the fact that it is typical minimus breeding place and within the control area. In its sketch map attached herewith, there is shown an impassable barrier somewhere along the course of the stream, which need to be cleared out, taking proper precautions of the crocodiles which are said to be roaming around in the said stream. Clearing is needed to such an extent as to allow spraying therein.

5. Survey of San Raymundo swamps at present included in your control was made; and of the anopheles larvæ collection, 59 per cent were Ludlowii, 35 per cent were Rossii (vagus), 5 per cent were Barbirostris and 3 per cent were the unclassified species. In view of the fact that the swamps cover a very extensive area and present only stagnant water, please be advised that, adhering to the "species control" policy as approved by the Malaria Advisory Board to control only minimus breeding places, such swamps need not be controlled from the malaria standpoint of view, not to look at it from the angle as veritable source of mosquito nuisance.

6. Survey of the Busbus pond, swamp, and canal fails to show anopheles breeding thereat. In view of the fact that those are not minimus breeding places judging from the stagnant or semi-stagnant, dirty, markedly turbid water, in places of which are petrifying debris, please be advised that unless your intention is to curtail mosquito nuisance in that locality (as I was informed by your inspector that the place is used to be sprayed with oil instead of Paris green) the work may be done away with con-

sidering the "species control" policy brought out in the preceding paragraph.

7. Survey of the stream in Camp Romandier shows that more intensive malaria control work should be carried out there judging from the prolific anopheles minimus breeding thereat especially so in Romandier stream No. 1. When the dispensary attendant was asked about it, the answer was that it was already beyond his ability to shoulder the malaria control work in its true meaning in view of the manifold duties he is handling. Of the larvæ collection from Romandier stream No. 1, 95 per cent were minimus typical and 5 per cent were Barbirostris; and from Romandier stream No. 2, 92 per cent were minimus typical, and 8 per cent were Barbirostris.

8. In the particular small stream crossing the provincial road in Indanan locality which you requested me to make some dippings on our way to town, there have been collected 88 per cent minimus typical, 6 per cent Barbirostris, and 6 per cent Hyrcanus.

9. Survey of Taglibi Springs shows 58 per cent minimus typical and 42 per cent Barbirostris. The stream is a typical minimus breeding place, and there has been prolific breeding found thereat.

(b) Siasi Island—

In Siasi district particularly, no anopheles breeding places were found. In Cabbon locality far out of the municipal district there was found a small seepage not far from the school house. Of the few larvæ collection, 50 per cent were Ludlowii and 50 per cent were Rossii (vagus). The Moro houses are markedly scattered out in the locality very far apart from each other, so much so that only the schoolhouse apparently stands out alone on a hill.

(c) Tawi-tawi Island—

Malaria survey of Bato-bato colony brings out some promising indications that malaria incidence thereat can be minimized, not to say eradicate the disease, if control measures could only be free of any shortcoming and therefore be strictly followed. A radius of about 1½ kilometers and in places much more, from the suburb houses of the colony on the east, north and west sides (south side corresponding to sea) has been covered looking for anopheles breeding places.

It is pleasing to state that within the established limit of the control area, excepting three seepages, practically all creeks are dry as none of them depends upon spring for water but upon the rain. And informations gathered from the colonists point out to the effect that once or twice a year all creeks in and around the colony dry out. The drying out of all the creeks is a great help of nature to the malaria control work thereof in the sense that when the creeks get dry all breeding is coincidentally stopped; and no anopheles propagation can take place. The burden of control measures is therefore only shouldered during rainy season when newly created streams appear. And if during rainy season, the streams could only be kept well under control until they dry out, the malaria vector in the course of time if not eradicated would be practically insignificant. In this connection, it is deemed wise to state that Dr. Jose de las Peñas, president of sanitary division at the place, was with me in the surveys of the creeks and establishment of control areas; and I gave him all

advices necessary in the control work thereof. A particular spot on a creek-bed at Fajardo's homestead, is not completely dry yet and all the larvæ collected from the stagnant water are barbirostris. In the seepage from the well at Narboneta's homestead, the larvæ collected are all minimus typical. The water goes only to a very short distance and then absorbed by the soil, in which case it can be easily put under control. In the seepage from a well near Colonist Cruz's house, the larvæ collected are all Rossii (vagus). The water in this place stagnates on a low ground where there is plenty of vegetations. In the seepage from a well farther out north of the Cruz's coconut plantation, of the larvæ collected 81 were minimus typical and 19 were barbirostris. This seepage is also of short extension and can be easily handled. Farther out from this place, no breeding places are in existence.

(d) Bongao Island. Survey of Bongao district fails to show any breeding place in existence. The creek-beds are all dry.

(e) Spleen indices of the school children and adults in the different places surveyed are herein given for your information:

Place	Total examined	Total Palpable	Spleen Indices	Remarks
			<i>Per cent</i>	
Jolo.....	46	4	9	School children
Cabbon (Siasi).....	91	8	8	Do
Siasi District.....	291	5	1	Do
Tandubas.....	102	12	12	Do
Bato-Bato.....	65	50	77	School children including 2 teachers and 1 nurse
Bato-Bato.....	65	36	42	Colonists, (adults and children excluding those at school)
Bongao.....	32	4	13	Children and 5 adults

In this connection, I request to state that I cannot furnish you yet blood indices for the blood films are to be examined yet at our Malaria Control Laboratory.

2. The sketch maps herewith are illustrations of how malaria control areas are established. In establishing a control we have to consider a radius of  $1\frac{1}{2}$  km. around the locality to be protected from the suburb houses; and all of the streams or part of the streams that breed anopheles minimus within the control area must be sprayed with paris green mixture once a week. For proper supervision and checking purposes, the streams are divided into larva stations. A larva station covers an estimated distance along the course of the stream that a regular laborer can spray in one day. At least one day after spraying a malaria control inspector should check up the larva station concerned for the condition of the breeding if there is any yet in existence. This checking will determine whether spraying has been done well or not at all in the previous day. It is the duty also of the said inspector to see to it that the laborers are doing their work properly. With the sketch maps, you are also furnished programme of Paris green spraying simply to have on record where the work is on particular days during the week, and just where to check up the laborers when desired so. The day for the preparation of road dust is not designated, for you get it by contact which is a very good idea for, it lessens the burden on the supervision work.

3. It is perhaps needless for me to further emphasize that close supervision of the field laborers that do the spraying of Paris green mixture to streams and necessary checkings of the said streams for the presence of anopheles larvæ are needed if we expect to have the desired result; and therefore it is but essential that the personnel assigned to malaria control work should handle no other but that; and there must be at least one man who has had already malaria control training to assume the duties of Field Director who will be directly responsible to you of all that is connected or related to the malaria control work in your province.

4. I thank you for your coöperation with me in pushing thru to a finish the necessary surveys relative to malaria control work and malaria inquiry.

(Sgd.) ANTONIO EJERCITO

*Assistant Chief, Malaria Control Division*

(Encls: Sketch maps and programmes of work)

[TRUE COPY

## MISCELLANEOUS

---

### CAMARINES NORTE

The municipalities which showed an increased death rate are Basud, Daet, Indan, and Labo. Most of the deaths were among children due to acute respiratory diseases. In Daet, cases of death from dysentery and typhoid fever were registered. In San Vicente, one case of death due to rabies was registered the diseased being reported only at the time of death and consequently no more remedial measures could be done. With the advent of this rainy weather a number of persons reported to have been bitten by supposed rabid dogs, which they killed immediately, and these persons are now under antirabic treatment. The extermination of all stray dogs in streets and public places will soon be undertaken.

### CEBU

The general health condition in the whole District during the month was satisfactory.

On the 19th of the month, the leper collection boat arrived in this City and took 98 lepers for Culion. One leper under the name of Simplicio Santillan had been shot by a Constabulary soldier when he ran away to escape. Said leper died at 7 p. m. of the same day.

### NUEVA ECIJA

In Cabanatuan, 45 cases were brought to the court for violation of existing sanitary ordinances.

### SORSOGON

In Magallanes, the watered ones and market site were inspected by me (P. B. Caro, district health officer) and found in good sanitary condition.

### SIBUL SPRINGS ARE BOOSTED

The Philippine Health Service recommends Sibul Springs in San Miguel, Bulacan, for the treatment of skin infections and catarrhal conditions of the stomach.

According to health reports, the baths are now being improved in order to attract people of moderate means who cannot go abroad on vacation or spend a few weeks in the heights of Baguio.

The health service is now maintaining in the Springs a regular dispensary and recently, the amount of ₱1,200 was made available for the fencing of the premises.

#### HOSPITALS IN ALL PROVINCES

An extensive hospital building program has just been completed by officials of the Philippine Health Service. According to the newly drafted program, the Philippine Health Service will build provincial hospitals in all the provinces and dispensaries and emergency hospitals in places where they are needed. The realization of the plan of the health service depends, however, upon the approval of the Legislature of the increase in the yearly appropriation for the Philippine Health Service now being requested by the health authorities.

#### MUST EXPLAIN HEALTH WORK

District nurses in the different provinces of the Islands have been ordered by the Central Office to explain as much as possible the work of the health service in order that the people may understand the value of health work.

It has been also ordered that the District Nurses must take active part in garden day and other affairs of the public schools when they can have ample opportunity to preach the gospel of health.

#### CHINESE WOMAN DOCTOR SHOWS GREAT INTEREST IN P. I. HEALTH SERVICE WORK

Dr. Mariam Yang, of the Peking Union Medical College, visited the Philippine Health Service in order to acquaint herself with the organization of the health service and its method of publicity.

Dr. Yang showed great interest in the various models and graphs exhibited in the office, especially those dealing with living conditions in the city. She took with her various publications and posters of the bureau.

The woman doctor is a specialist in children diseases and in maternity service, and very anxious to learn what is being done here in the way of imparting sanitary knowledge to children in the primary grades.

## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of October, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1928 BY NATIONALITIES

Nationality	Population
Americans .....	3,134
Filipinos .....	298,265
Spaniards .....	1,955
Other Europeans .....	1,126
Chinese .....	17,856
All Others .....	2,186
<b>Total .....</b>	<b>324,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo .....	81,785
2. San Nicolas .....	29,544
3. Binondo .....	17,852
<b>Total .....</b>	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz .....	52,911
5. Quiapo .....	16,066
6. San Miguel .....	4,491
7. Sampaloc .....	40,210
<b>Total .....</b>	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area .....	4,878
9. Intramuros .....	14,813
10. Ermita .....	16,847
11. Malate .....	16,683
12. Paco .....	16,244
13. Pandacan .....	6,937
14. Santa Ana .....	6,761
<b>Total .....</b>	<b>81,663</b>
<b>Grand total .....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, OCTOBER, 1928**

Date	Pres- sure mean <sup>1</sup>	Temperature						
		In shade <sup>2</sup>					Underground	
							0.50 m.	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	757.81	26.9	32.4	6	23.0	5.6	29.3	29.4
11-20.....	58.76	26.5	33.6	15	21.5	18	29.8	30.0
21-31.....	56.82	25.8	32.2	23	22.4	31	29.2	29.3

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	85.0	88.0	3	81.8	5
11-20.....	79.3	85.5	13	72.2	18
21-31.....	83.9	89.8	26	77.3	29

Date	Prevailing direction	Wind			Atmidometer <sup>1</sup> (open air)		
		Velocity					
		Total	Daily total maxi- mum	Day	Total	Daily maxi- mum	Day
		Kms.	Kms.		mm.	mm.	
1-10.....	Equad.	1,247.5	267.5	1	21.4	3.5	5
11-20.....	NE.	1,424.5	215.0	20	30.8	4.9	18
21-31.....	NE,E	1,613.5	239.0	29	22.8	3.5	28

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	52 40	9 45	5	31.5	9
11-20.....	50 55	7 55	18	17.2	5
21-31.....	35 15	9 15	29	39.8	8

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.



**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	12	4	16	60.15
Filipinos.....	780	661	1,441	56.92
Spaniards.....	2	2	4	24.11
Other Europeans.....	4	1	5	52.32
Chinese.....	43	28	71	46.85
All Others.....	7	8	15	80.85
<b>Total and average.....</b>	<b>848</b>	<b>704</b>	<b>1,552</b>	<b>56.35</b>

**NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS**

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MEGSIC:</b>							
1. Tondo.....	202	172	374	7	4	11	385
2. San Nicolas.....	52	45	97	4	2	6	103
3. Binondo.....	26	21	47	1	1	2	49
<b>Total.....</b>	<b>280</b>	<b>238</b>	<b>518</b>	<b>12</b>	<b>7</b>	<b>19</b>	<b>537</b>
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	120	91	211	7	4	11	222
5. Quiapo.....	26	23	49	2	2	4	51
6. San Miguel.....	18	21	39	1	2	3	42
7. Sampaloc.....	140	126	266	9	7	16	282
<b>Total.....</b>	<b>304</b>	<b>261</b>	<b>565</b>	<b>19</b>	<b>13</b>	<b>32</b>	<b>597</b>
<b>No. III, PACO:</b>							
8. Port Area.....	3		3				3
9. Intramuros.....	36	26	62	2	1	3	65
10. Ermita.....	40	25	65		1	1	66
11. Malate.....	70	67	137	6	4	10	147
12. Paco.....	38	28	66	2	2	4	70
13. Pandacan.....	13	14	27	1		1	28
14. Santa Ana.....	22	16	38		1	1	39
<b>Total.....</b>	<b>222</b>	<b>176</b>	<b>398</b>	<b>11</b>	<b>9</b>	<b>20</b>	<b>418</b>
<b>Grand total.....</b>	<b>806</b>	<b>675</b>	<b>1,481</b>	<b>42</b>	<b>29</b>	<b>71</b>	<b>1,552</b>

Attended by physicians: living, 473; stillbirths, 19.

Attended by midwives: living, 87; stillbirths, 1.

Attended by families: living, 992; stillbirths, 22.

**NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS  
IN THE CITY OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	3	1	4	15.04
Filipinos.....	327	264	591	23.34
Spaniards.....	1		1	6.03
Other Europeans.....				
Chinese.....	13	2	15	9.99
All Others.....	3		3	16.17
<b>Total and average.....</b>	<b>347</b>	<b>267</b>	<b>614</b>	<b>22.29</b>

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY  
DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MESEIC:</b>			
1. Tondo.....	107	91	198
2. San Nicolas.....	22	22	44
3. Binondo.....	13	6	19
<b>Total.....</b>	<b>142</b>	<b>119</b>	<b>261</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	59	42	101
5. Quiapo.....	15	6	21
6. San Miguel.....	6	7	13
7. Sampaloc.....	58	47	100
<b>Total.....</b>	<b>133</b>	<b>102</b>	<b>235</b>
<b>No. III, PACO:</b>			
8. Port Area.....	14	6	20
9. Intramuros.....	3	7	10
10. Ermita.....	27	17	44
11. Malate.....	11	7	18
12. Paco.....	6	7	13
13. Pandacan.....	11	2	13
14. Santa Ana.....			
<b>Total.....</b>	<b>72</b>	<b>46</b>	<b>118</b>
<b>Grand total.....</b>	<b>347</b>	<b>267</b>	<b>614</b>

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	145	89
Divorced.....		
Widowed.....	22	68
Single.....	239	150
Conditions not stated.....	4	1
<b>Total.....</b>	<b>410</b>	<b>308</b>
<b>Grand total.....</b>	<b>718</b>	

Stillbirths 42.

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	107	69	7	5	188
1 year plus.....	20	21	1	3	45
2 years plus.....	9	5	.....	1	15
3 years plus.....	5	5	2	.....	12
4 years plus.....	1	5	.....	.....	6
5 to 9 years.....	7	10	1	1	19
10 to 14 years.....	3	2	1	2	8
15 to 19 years.....	22	8	6	5	41
20 to 24 years.....	26	13	9	4	52
25 to 29 years.....	18	10	2	2	32
30 to 34 years.....	14	19	5	3	41
35 to 39 years.....	18	13	4	4	39
40 to 44 years.....	14	11	3	1	29
45 to 49 years.....	16	6	5	4	31
50 to 54 years.....	11	9	2	2	24
55 to 59 years.....	15	6	1	.....	22
60 to 64 years.....	12	7	8	2	29
65 to 69 years.....	12	2	2	1	17
70 to 74 years.....	6	7	1	.....	14
75 to 79 years.....	3	10	.....	1	14
80 to 84 years.....	1	7	.....	.....	8
85 to 89 years.....	2	7	.....	.....	9
90 to 94 years.....	1	5	2	.....	8
95 to 99 years.....	2	9	.....	.....	11
100 years and over.....	2	1	.....	.....	3
Age not stated.....	.....	.....	.....	.....	.....
Total.....	347	267	62	41	717

NOTE.—One male chinese, age and permanent residence unknown, not included in the above table.





NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA—Continued

International list number (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
108-127	<i>VI. Diseases of the digestive system</i>													
111	Ulcer of the stomach and duodenum:													
112	a. Ulcer of the stomach.....			1						1				2
113	Other diseases of the stomach (cancer excepted).....			3	1									4
114	Diarrhea and enteritis (under 2 years of age).....			9	4						1			14
115	Diarrhea and enteritis (2 years and over).....				8									8
116	Diseases due to other intestinal parasites:													
117	c. Nematodes (other than ancylostoma).....			1										1
118	Appendicitis and typhlitis.....	1		2	1					1				5
119	Hernia, intestinal obstruction:													
120	b. Intestinal obstruction.....			2										2
121	c. Cirrhosis of the liver:													
122	b. Not specified as alcoholic.....			2	1									3
123	Biliary calculi.....			1										1
124	Other diseases of the liver.....			3	2									5
125	Other diseases of the liver.....													
126	Peritonitis without specified cause.....				1									1
128-142	<i>VII. Nonvenereal diseases of the genito-urinary system and annexa</i>													
128	Acute nephritis (including unspecified under 10 years of age).....			3	7					1				12
129	Chronic nephritis (including unspecified under 10 years of age).....			11	10									21
130	Calculi of the urinary passages.....			1										1
131	Diseases of the bladder.....			1										1
132	Diseases of the prostate.....													
133	Diseases of the prostate.....													
134	Other diseases of the female genital organs.....				1									1
143-150	<i>VIII. The puerperal state</i>													
143	Accidents of pregnancy:													
144	b. Ectopic gestation.....				1									1
145	Puerperal hemorrhage.....				2									2
146	Puerperal albuminuria and convulsions.....				1									1
151-154	<i>IX. Diseases of the skin and of the cellular tissue</i>													
151	Gangrene.....				1									2
152	Furuncle.....			1										1
153	Acute abscess.....			3										3



# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International number (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													8
5	a. Typhoid fever.....			4	4									1
16	Malaria:			1										1
	a. Malarial fever.....			1										1
	Dysentery:			2	1									3
	a. Amebic.....													1
	b. Bacillary.....													1
	c. Unspecified or due to other causes.....													1
29	Tetanus:													1
	b. Others.....			1	1									2
31	Tuberculosis of the respiratory system.....			7	6									13
32	Tuberculosis of the meninges and central nervous system.....									1				1
33	Tuberculosis of the intestines and peritoneum.....				1									1
38	Syphilis.....			1										1
43-69	<i>II. General diseases not included in Class I</i>													
43	Cancer and other malignant tumors of the buccal cavity.....			1										1
44	Cancer and other malignant tumors of the stomach, liver.....			2			1							3
45	Cancer and other malignant tumors of the peritoneum, intestines, rectum.....			2										2
49	Cancer and other malignant tumors of other or unspecified organs.....			1	2									3
60	Diseases of the thyroid gland:													
	a. Exophthalmic goiter.....			1										1
68	Chronic poisoning by organic substances.....										1			1
69	Other general diseases.....			1	1									2
70-86	<i>III. Diseases of the nervous system and of the organs of special sense</i>													
71	Meningitis:													
	a. Simple meningitis.....													3
74	Cerebral hemorrhage, apoplexy:													
	a. Cerebral hemorrhage.....													1
76	General paralysis of the insane.....													1





## NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

International list num- ber (re- vision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
164	XIII. Old age													
164				2										2
165-203	XIV. External causes													
181				1										1
188	Accidental absorption of irrespirable, irritating, or poisonous gas.													
	Accidental traumatism by other crushing (vehicles, railways, landslides, etc):													
	c. Automobile accidents.			1										1
	Total	1		57	39	1	1			3	1		1	103
	Grand total	1		96		1				4		1		103

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN  
THE CITY OF MANILA, DURING THE MONTH OF OCTOBER, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month	
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days			
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All causes	114	74										52	32
COMMUNICABLE DISEASES:													
Typhoid and paratyphoid fever (1)													
Smallpox (6)													
Measles (7)													
Whooping-cough (9)													
Diphtheria (10)													
Influenza (11)	1												
Asiatic cholera (14)													
Dysentery (16)	2	1											
Meningococcus meningitis (24)													
Other epidemic and endemic diseases (25)													
Tetanus (29)	3	1		3				1				3	1
Other infectious diseases (1-42) 1	1	1											
Beriberi (55)	2	15	1	7	4	3	1	3	1	1	1	15	6
Diseases of the nervous system (70; 71; 80; 85)	3	4										1	1
Respiratory diseases (99; 100; 101; 107)	28	20		1				1				2	2
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)	8	2						2					
Congenital malformations (159)													
Early infancy (160; 161; 162; 163)	31	24	13	10	5	1	2	2	2	1		27	22
All other causes (43-206) 1	8	5				3						3	

**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS  
IN THE CITY OF MANILA, DURING THE MONTH OF OCTOBER, 1928 (INCLUDING TRANSIENTS)—Continued**

[Stillbirths not included]

Causes of death	Age at death under 1 year																								Total under 1 year	
	1 month + months																									

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

## ANTIPLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set . . . . .	22,556
Number of rats caught by spring traps . . . . .	2,289
Number of cage wire traps set . . . . .	579
Number of rats caught by cage wire traps . . . . .	0
Number and kind of baits (coconuts) . . . . .	23,788
Number of poison portions placed . . . . .	19,299
Number of rats found poisoned . . . . .	146
Number of rats killed by clubs and other weapons . . . . .	584
Number of rats found dead from other causes . . . . .	222
Total number of rats otherwise caught, found dead or killed . . . . .	3,241
Total number of rats sent to the laboratory for examination . . . . .	3,241
Total number of rats found positive for plague . . . . .	0

---

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF OCTOBER, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
	No.													
I.	1	1	6	1	1	1			6	2	6	1	12	3
	2	2	3	1					3	2	3	1	6	3
	3	1	1						3	1	1		4	1
	4		8	1	1				11		8	1	19	1
II.	5	1	1		1	1			1	2	1		2	2
	6													
	7	2	9	2	4	3			11	5	9	2	20	7
	8													
III.	9		1						5	3	1		6	3
	10	3												
	11		6	1					2		6	1	8	1
	12	1	1				1		1	1	2		3	
	13	1	1						1	1		1	1	1
	14	1							1				1	
Grand total	38	11	36	6	7	5	1		45	16	37	6	82	22

**REMARKS:**

Cases confirmed as typhoid fever.....

Cases confirmed as paratyphoid fever.....

By autopsy.....

By blood culture.....

By Widal reaction.....

By urine examination.....

By feces examination.....

By clinical symptoms.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Typhoid carrier—None.

80

2

2

3

35

0

1

41

27

8

**CHOLERA REPORTED DURING THE MONTH OF OCTOBER, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Grand total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I... { No. 1. No. 2. No. 3. No. 4. No. 5. No. 6. No. 7. No. 8. No. 9. No. 10. No. 11. No. 12. No. 13. No. 14.														
II...														
III...														
Grand total														

**REMARKS:**

No nonresident case was reported during the month.

Cholera carrier—7

**DIPHTHERIA REPORTED DURING THE MONTH OF OCTOBER, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female			Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths			
I. ....				1	1											1	1		1	1
{ No. 1. ....																				
{ No. 2. ....																				
{ No. 3. ....																				
{ No. 4. ....				1												1			1	
{ No. 5. ....																				
{ No. 6. ....																				
{ No. 7. ....				3	1											3	1		3	1
{ No. 8. ....																				
{ No. 9. ....																				
{ No. 10. ....																				
{ No. 11. ....																				
{ No. 12. ....	1			1									1			1			2	
{ No. 13. ....																				
{ No. 14. ....																				
Grand total .....	1			6	2								1			6	2		7	2

**REMARKS:**

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Diphtheria carrier—7

0

0



DYSENTERIES REPORTED DURING THE MONTH OF OCTOBER, 1928, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Grand total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I. { No. 1..... No. 2..... No. 3..... No. 4..... No. 5..... No. 6..... No. 7..... No. 8..... No. 9..... No. 10..... No. 11..... No. 12..... No. 13..... No. 14.....	5	1	2	1	2	2	2	2	7	3	4	2	11	5
II. { No. 1..... No. 2..... No. 3..... No. 4..... No. 5..... No. 6..... No. 7..... No. 8..... No. 9..... No. 10..... No. 11..... No. 12..... No. 13..... No. 14.....	3	1	1	1	1	1	1	1	3	1	1	1	4	2
III. { No. 1..... No. 2..... No. 3..... No. 4..... No. 5..... No. 6..... No. 7..... No. 8..... No. 9..... No. 10..... No. 11..... No. 12..... No. 13..... No. 14.....	2	1	1	1	2	1	1	1	2	2	1	1	3	3
Grand total.....	11	2	5	1	4	3	3	3	15	5	8	4	23	9

REMARKS:

Amoebic dysentery.....

Bacillary dysentery.....

Unspecified.....

Cases reported among nonresident persons not included in the table.....

Deaths reported among nonresident persons not included in the table.....

Dysentery carrier—None.

0

18

5

5

5

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF OCTOBER, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	40	12	1	1
Varicella.....	1	1		
Varioloid.....				
Smallpox.....				
Measles.....	2	3		1
Whooping cough.....				
Influenza.....	13	6	4	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	180	158	70	60
Tuberculosis of other organs.....	8	3	8	2
Beriberi, infantile.....	29	15	29	15
Beriberi, adults.....	1	2	1	2

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	21	9	1	1
Varicella.....	3	6		
Varioloid.....				
Smallpox.....				
Measles.....				
Whooping cough.....				
Influenza.....	3			
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	26	28	7	6
Tuberculosis of other organs.....	2	1	1	1
Beriberi, infantile.....				
Beriberi, adult.....				

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINES FOR THE  
MONTH OF OCTOBER, 1928**

Sera and vaccines	On hand October 1, 1928	Received during the month	Total to be accounted for	Distrib- uted during the month	Remaining at the end of the month
Anti-diphtheric serum (tubes).....	262		262	60	202
Anti-dysenteric serum (ampoules).....	86	300	386	224	162
Anti-tetanic serum (units).....	795,000	500,000	1,295,000	400,000	895,000
Cholera vaccine (c.c.).....	20,700	60,000	80,700	73,700	7,000
Dried vaccine virus (units).....	500	100,000	100,500	96,300	4,200
Dysenteric vaccine (c.c.).....	2,510	90,000	92,510	90,110	2,400
Fresh vaccine virus (units).....	5,100	200,000	205,100	175,300	29,800
Gonococcus vaccine (ampoules).....					
Mixed typhoid cholera vaccine (c.c.).....	8,920	150,000	158,920	154,020	4,900
Normal horse serum (ampoules).....		25	25	25	
Typhoid vaccine (c.c.).....	6,720	18,000	24,720	18,900	5,820

# REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF OCTOBER, 1928

611

Health district	Municipal districts	Vaccinations			Inspections of persons vaccinated					
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over	
			Never	Successfully	Unsuccessful	Positive	Negative	Positive	Negative	Total
No. 1.	Tondo.	354	337	17	17	375	9	8	2	385
	San Nicolas.	985	273	18	18	201	28	2	231	9
	Binondo.	93	89	4	4	80	3	1	81	1
	Santa Cruz.	1,125	297	811	17	261	5	17	54	3
	Quinta.	56	55	1	1	61	3	3	64	59
No. 2.	San Miguel.	33	31	2	2	21	4	1	25	1
	Sampaloc.	306	298	1	7	241	3	10	4	255
	Port Area.	2	2	0	0	0	0	0	0	3
	Intramuros.	834	136	614	84	70	18	32	40	128
	Ermita.	33	30	3	3	18	1	1	19	640
No. 3.	Malate.	186	161	5	20	120	6	6	11	137
	Paco.	122	109	13	13	65	2	2	5	67
	Pandacan.	43	41	2	2	25	2	1	25	25
	Santa Ana.	34	33	1	1	44	2	2	46	46
	Grand total.	4,206	1,892	2,125	189	1,582	31	100	34	664
										2,228
										729

5,525 units  
6,000 units  
4,790 units  
6,735 units  
11,525 units 11,525 units

VACCINE VIRUS:  
Remaining from last month.....  
Received during the month.....  
Used during the month.....  
Remaining for next month.....  
Total.....

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA  
DURING THE MONTH OF OCTOBER, 1928<sup>1</sup>**

Health districts	Municipal districts	First injection		Second injection		Total	
		V.	R.	V.	R.	V.	R.
No. 1. ....	{ Tondo.....	1,438		481		1,919	
	{ San Nicolas.....						
	{ Binondo.....						
No. 2. ....	{ Santa Cruz.....						
	{ Quiapo.....						
	{ San Miguel.....						
	{ Sampaloc.....	867		528		1,395	
No. 3. ....	{ Port Area.....						
	{ Intramuros.....						
	{ Ermita.....	1,721		1,498		3,219	
	{ Malate.....	3,840		3,750		7,590	
	{ Paco.....	329		2,223		2,552	
	{ Pandacan.....	1,130		1,114		2,244	
	{ Santa Ana.....	1,402		1,370		2,772	
Total. ....		10,727		10,964		21,691	

<sup>1</sup> V., in persons never vaccinated before; R., revaccinations.

**ANTYTYPHOID AND ANTYPHOLOERA VACCINATIONS PERFORMED IN THE  
CITY OF MANILA DURING THE MONTH OF OCTOBER, 1928<sup>1</sup>**

Health districts	Municipal districts	First injection		Second injection		Third injection		Total	
		V.	R.	V.	R.	V.	R.	V.	R.
No. 1. ....	{ Tondo.....	269	4,450	237	3,882	267	3,397	773	11,729
	{ San Nicolas.....	23	1,066	11	882	6	695	40	2,643
	{ Binondo.....	5	1,339	4	838	3	657	12	2,834
No. 2. ....	{ Santa Cruz.....	71	1,412	36	979	13	812	120	3,203
	{ Quiapo.....	195	505	194	411	55	203	444	1,119
	{ San Miguel.....	2	126	9	108		99	11	333
	{ Sampaloc.....	209	3,563	159	3,302	81	3,034	449	9,899
	{ Port Area.....								
No. 3. ....	{ Intramuros.....	49	832	27	629	25	367	101	1,828
	{ Ermita.....		1,028		840		672		2,540
	{ Malate.....	36	1,328	30	868	15	649	81	2,845
	{ Paco.....	50	1,007	24	60			74	1,067
	{ Pandacan.....								
	{ Santa Ana.....								
	Total.....	909	16,656	731	12,799	465	10,585	2,105	40,040

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.

Typhoid and paratyphoid vaccine used for the third injection V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Total vaccina- tions	Vaccinations		
		Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	11,882	1,925	3,388	6,569
Agusan.....	7,483	2,345	1,639	3,499
Albay.....	38,249	8,719	11,458	18,072
Antique.....	19,735	5,994	8,439	5,302
Bataan.....	11,097	4,528	1,914	4,655
Batanes.....	1,786	160	900	726
Batangas.....	53,240	14,979	14,809	23,452
Bohol.....	58,607	16,496	18,449	23,662
Bukidnon.....	7,180	2,736	1,123	3,321
Bulacan.....	40,853	12,982	15,769	12,112
Cagayan.....	97,397	16,403	67,474	13,520
Camarines Norte.....	7,462	2,328	2,042	3,092
Camarines Sur.....	20,762	5,323	4,390	11,049
Capiz.....	46,397	12,358	18,174	15,865
Catanduanes.....	27,673	3,286	10,623	13,764
Cavite.....	126,695	8,453	107,012	11,230
Cebu.....	129,961	33,804	25,048	71,109
Cotabato.....	25,137	8,451	7,737	8,949
Davao.....	32,901	11,864	11,836	9,201
Ilocos Norte.....	123,717	7,326	94,262	22,129
Ilocos Sur.....	26,862	6,962	5,600	14,300
Iloilo.....	139,085	41,908	68,878	28,299
Isabela.....	17,971	4,081	3,542	10,348
Laguna.....	120,355	11,230	92,975	16,150
Lanao.....	16,723	5,181	7,488	4,054
La Union.....	25,016	5,174	410	19,432
Leyte.....	136,369	43,269	45,516	47,584
Marinduque.....	10,052	1,996	5,214	2,842
Masbate.....	49,082	6,220	30,631	12,231
Mindoro.....	7,719	1,886	1,638	4,195
Misamis.....	34,241	12,128	2,613	19,500
Mountain Province.....	40,339	13,831	13,141	13,367
Nueva Ecija.....	60,743	15,003	23,101	22,639
Nueva Vizcaya.....	5,739	1,815	824	3,600
Occidental Negros.....	95,231	29,372	42,415	23,444
Oriental Negros.....	46,118	15,842	11,709	18,567
Palawan.....	4,573	941	1,597	2,035
Pampanga.....	26,826	11,059	1,576	14,191
Pangasinan.....	85,538	23,268	20,459	41,811
Rizal.....	33,394	8,252	18,105	7,037
Romblon.....	9,787	2,278	3,246	4,263
Samar.....	63,781	13,724	17,972	32,085
Sorsogon.....	60,264	11,730	24,479	24,055
Sulu.....	25,038	10,427	6,278	8,333
Surigao.....	11,372	3,343	2,308	5,721
Tarlac.....	26,229	5,908	15,290	5,031
Tayabas.....	34,840	13,105	5,519	16,216
Zambales.....	7,892	2,340	1,048	4,504
Zamboanga.....	16,809	6,614	1,831	8,364
Total.....	2,126,202	508,847	901,879	715,476

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928**—Continued

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive	Posi- tive	Nega- tive
Abra.....	1,036	491	2,019	1,379	2,050	3,496	5,105	5,366
Agusan.....	365	263	608	765	1,031	791	2,004	1,819
Albay.....	4,505	1,843	4,437	1,554	5,842	4,890	14,784	8,287
Antique.....	1,993	576	2,707	1,212	2,464	2,723	7,164	4,511
Bataan.....	2,600	455	3,010	1,150	1,399	758	7,009	2,363
Batanes.....	108	77	219	177	596	452	923	706
Batangas.....	7,346	1,815	10,106	4,547	10,165	9,514	27,617	15,876
Bohol.....	5,452	2,397	8,375	4,362	15,124	13,607	28,951	20,366
Bukidnon.....	229	139	567	520	1,495	1,921	2,291	2,580
Bulacan.....	8,280	1,847	7,681	3,302	7,751	6,131	23,712	11,280
Cagayan.....	5,111	1,307	7,730	2,717	21,509	24,966	34,350	28,990
Camarines Norte.....	1,309	371	2,376	687	1,267	661	4,952	1,719
Camarines Sur.....	2,657	1,303	3,858	1,741	5,395	3,171	11,910	6,215
Capiz.....	3,996	992	5,403	2,140	14,401	7,826	23,800	10,958
Catanduanes.....	2,191	1,069	3,078	1,351	5,617	4,874	10,886	7,294
Cavite.....	5,414	2,305	8,483	5,731	37,282	40,003	51,179	48,039
Cebu.....	11,818	5,450	12,646	6,476	17,192	22,035	41,656	33,961
Cotabato.....	969	486	2,221	1,142	6,009	3,810	9,199	5,438
Davao.....	1,154	429	2,836	1,321	9,086	6,494	13,076	8,244
Ilocos Norte.....	4,643	1,750	12,987	6,184	39,648	40,756	57,278	48,690
Ilocos Sur.....	3,016	1,396	4,911	2,378	5,284	4,623	13,211	8,397
Iloilo.....	9,037	2,363	17,188	5,882	34,220	34,238	60,445	42,483
Isabela.....	2,273	731	3,093	1,041	4,387	2,372	9,753	4,144
Laguna.....	4,073	3,360	6,401	4,816	23,966	36,969	34,440	45,145
Lanao.....	780	424	1,222	994	2,298	2,858	4,300	4,276
La Union.....	3,170	1,393	4,514	3,927	3,217	5,011	10,901	10,331
Leyte.....	5,990	1,648	19,065	4,627	36,139	23,479	61,194	29,754
Marinduque.....	878	303	578	216	1,755	2,826	3,211	3,345
Masbate.....	1,565	307	4,513	1,116	16,342	8,182	22,420	9,605
Mindoro.....	718	242	988	542	1,816	1,430	3,522	2,214
Misamis.....	2,671	1,000	3,968	1,699	6,238	3,534	12,877	6,633
Mountain Province.....	568	211	2,168	1,216	7,921	6,002	10,657	7,429
Nueva Ecija.....	6,177	2,365	10,272	4,106	13,073	9,912	29,522	16,383
Nueva Vizcaya.....	720	373	514	631	1,079	1,930	2,313	2,934
Occidental Negros.....	6,235	1,505	11,424	3,729	20,047	19,029	37,706	24,263
Oriental Negros.....	7,080	1,973	7,926	3,339	10,351	6,502	25,357	11,814
Palawan.....	58	61	216	177	1,171	1,416	1,445	1,654
Pampanga.....	4,001	1,978	2,955	1,582	832	1,007	7,788	4,567
Pangasinan.....	12,687	3,270	14,500	4,636	17,829	16,510	45,016	24,416
Rizal.....	4,226	1,952	1,973	1,779	5,460	7,280	11,659	11,011
Romblon.....	1,205	481	1,690	519	2,634	1,718	5,529	2,718
Samar.....	2,432	1,260	4,634	3,164	10,587	8,686	17,653	13,110
Sorsogon.....	2,837	1,041	6,504	2,007	21,003	10,161	30,344	13,209
Sulu.....	1,078	517	3,700	1,999	3,889	4,684	8,667	7,200
Surigao.....	718	254	1,332	665	3,344	2,557	5,394	3,476
Tarlac.....	1,973	1,050	3,679	2,405	3,942	6,845	9,594	10,300
Tayabas.....	5,275	2,803	7,051	3,082	8,100	6,619	20,426	12,504
Zambales.....	719	587	865	1,290	1,196	1,701	2,780	3,578
Zamboanga.....	899	616	2,221	1,585	3,135	3,057	6,255	5,258
Total.....	164,235	60,829	251,412	113,607	476,578	440,417	892,225	614,853

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by Vaccinating Parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Total
Abra.....	6,036	5,113	11,149
Agusan.....	3,667	1,541	5,208
Albay.....	1,719	226	1,945
Bataan.....	44		44
Bohol.....	1,703	1,056	2,759
Bukidnon.....	1,605	557	2,162
Bulacan.....	2,274	1,056	3,330
Cagayan.....	8,666	5,437	14,103
Camarines Norte.....	1,114	932	2,046
Camarines Sur.....	7,119	2,828	9,947
Capiz.....	20,812	14,166	34,978
Catanduanes.....	3,701	2,035	5,736
Cebu.....	10,368	6,153	16,521
Iloilo.....	44,793	27,177	71,970
Isabela.....	3,038	2,239	5,277
Laguna.....	10,155	7,274	17,429
La Union.....	30,608	25,812	56,420
Masbate.....	884	212	1,096
Mindoro.....	2,236	1,581	3,817
Misamis.....	771	225	996
Mountain Province.....	3,147	1,417	4,564
Nueva Vizcaya.....	42	15	57
Occidental Negros.....	3,498	1,945	5,443
Oriental Negros.....	437	308	745
Palawan.....	91	81	172
Pampanga.....	3,593	1,104	4,697
Pangasinan.....	23,889	18,678	42,567
Rizal.....	8,729	2,444	11,173
Romblon.....	4,708	4,318	9,026
Samar.....	1,381	1,164	2,545
Surigao.....	70	54	124
Tarlac.....	5,772	2,246	8,018
Tayabas.....	5,076	2,856	7,932
Zambales.....	1,209	566	1,775
Zamboanga.....	248	170	418
<b>Total.....</b>	<b>223,203</b>	<b>142,986</b>	<b>366,189</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLOERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Agusan.....	354	118		472
Albay.....	15,436	5,894	274	21,604
Antique.....	2,119	1,233		3,352
Bataan.....	9,139	582		9,721
Batangas.....	2,079	542		2,621
Bulacan.....	109,335	807		110,142
Cagayan.....	4,856	514		5,370
Camarines Sur.....	21,793	524		22,317
Capiz.....	298	226		524
Catanduanes.....	542	306		848
Cebu.....	394	338	50	782
Iloilo.....	222	85		307
Isabela.....	240	322		562
Laguna.....	1,811	586	7	2,404
Leyte.....	2,122	796		2,918
Mindoro.....	2,385	881		3,266
Nueva Ecija.....	285	99		384
Oriental Negros.....	100	35		135
Pampanga.....	1,374			1,374
Pangasinan.....	4,632	3,553		8,185
Rizal.....	144,731	16,005	3	160,739
Romblon.....	1,149	209		1,358
Samar.....	2,621	1,094	270	3,985
Sorsogon.....	10,757	522		11,279
Tarlac.....	1,999	763		2,762
<b>Total.....</b>	<b>340,773</b>	<b>36,034</b>	<b>604</b>	<b>377,411</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTI-TYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Albay.....	350	233	107	690
Bataan.....	51	51	51	153
Batangas.....	75	45		120
Bukidnon.....	157	82	31	270
Bulacan.....	4,886	2,917	1,444	9,247
Camarines Sur.....	3,476	1,943	77	5,496
Iloilo.....		120		120
Laguna.....	7,167	4,589	1,758	13,514
Mindoro.....	340	30		370
Mountain Province.....	82			82
Pampanga.....	6	6		12
Pangasinan.....	1,678	1,105	53	2,836
Rizal.....	3,021	1,211	205	4,437
Romblon.....	300	300		600
Sorsogon.....	333	89	9	431
Tarlac.....	3,088	1,098	173	4,359
<b>Total.....</b>	<b>25,010</b>	<b>13,819</b>	<b>3,908</b>	<b>42,737</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.



**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Abra.....	4,773	2,679		7,452
Agusan.....	3,768	2,215		5,983
Antique.....	3,277	1,774		5,051
Bataan.....	14,587	9,902		24,489
Batanes.....	627	585		1,212
Batangas.....	2,964	2,128		5,092
Bohol.....	4,382	3,277		7,659
Bukidnon.....	567	585	49	1,201
Bulacan.....	45	27		72
Cagayan.....	10,714	6,231		16,945
Camarines Norte.....	8,551	7,093		15,644
Camarines Sur.....	3,744	1,414		5,158
Capiz.....	5,018	2,548	124	7,690
Cavite.....	83,362	70,918		154,280
Cebu.....	27,227	8,372	495	36,094
City of Baguio.....	12	12		24
Cotabato.....	493			493
Davao.....	2,215	1,181		3,396
Ilocos Norte.....	6,719	2,882	692	10,293
Ilocos Sur.....	4,273	3,280	46	7,599
Iloilo.....	23,454	6,070		29,524
Isabela.....	6,338	4,795		11,133
Laguna.....	8,012	6,688	3,485	18,185
Lanao.....	12,726	5,645		18,371
La Union.....	9,626	6,605		16,231
Leyte.....	5,851	1,705		7,556
Marinduque.....	5,920	3,316		9,236
Masbate.....	1,387	261		1,648
Mindoro.....	2,322	1,131		3,453
Misamis.....	5,689	1,597	46	7,332
Mountain Province.....	2,538	764	578	3,880
Nueva Ecija.....	6,702	5,576		12,278
Nueva Vizcaya.....	2,152	1,759		3,911
Occidental Negros.....	11,245	5,233	69	16,547
Oriental Negros.....	6,913	3,164	3	10,080
Palawan.....	59	59		118
Pampanga.....	176,174	8,318		184,492
Pangasinan.....	13,190	8,970		22,160
Rizal.....	3,311	1,864		5,175
Samar.....	7,986	4,434	259	12,679
Sulu.....	30			30
Tarlac.....	4,235	2,647	44	6,926
Tayabas.....	21,144	10,936		32,080
Zambales.....	8,574	5,625		14,199
Zamboanga.....	11,978	3,400		15,378
Total.....	544,874	227,665	5,890	778,429

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF OCTOBER, 1928**

No case and no death reported during the month.

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF OCTOBER, 1928**

(No case and no death reported during the month)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF OCTOBER, 1928**

Sanitary orders	Health districts			
	No. 1 Meisic	No. 2 Sampaloc	No. 3 Paco	Total
<b>Orders pending, October 1, 1928:</b>				
Minor .....	132	101	275	508
Sewer .....	26	52	4	82
Vacating .....	8	9		17
Filling .....	26	46	25	97
<b>Total .....</b>	<b>192</b>	<b>208</b>	<b>304</b>	<b>704</b>
<b>Orders issued during the month:</b>				
Minor .....	19	12	23	54
Sewer .....	1	1		2
Vacating .....				
Filling .....			4	4
<b>Total .....</b>	<b>20</b>	<b>13</b>	<b>27</b>	<b>60</b>
<b>Orders completed during the month:</b>				
Minor .....	20	7	23	50
Sewer .....	1	4		5
Vacating .....				
Filling .....	1			1
<b>Total .....</b>	<b>22</b>	<b>11</b>	<b>23</b>	<b>56</b>
<b>Orders cancelled during the month:</b>				
Minor .....	5	2	5	12
Sewer .....				
Vacating .....	1	1		2
Filling .....	1			1
<b>Total .....</b>	<b>7</b>	<b>3</b>	<b>5</b>	<b>15</b>
<b>Orders pending, October 31, 1928:</b>				
Minor .....	126	104	270	500
Sewer .....	26	49	4	79
Vacating .....	7	8		15
Filling .....	24	46	29	99
<b>Total .....</b>	<b>183</b>	<b>207</b>	<b>303</b>	<b>693</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations .....	34	49	43	126
<b>Permits for minor building constructions:</b>				
Approved .....	37	60	27	124
Disapproved .....	13	11	10	34
<b>New buildings completed .....</b>	<b>17</b>	<b>34</b>	<b>22</b>	<b>73</b>
<b>Permits for light and mixed material constructions:</b>				
Approved .....	26	45	5	76
Disapproved .....	21	10	1	32
<b>Prosecutions:</b>				
Convictions .....				
Dismissals .....	4	5		9
Amount of fines .....				
<b>Plumbing permits issued .....</b>	<b>42</b>	<b>69</b>	<b>44</b>	<b>155</b>
<b>Plumbing projects completed .....</b>	<b>58</b>	<b>73</b>	<b>53</b>	<b>184</b>
<b>Premises connected to the sanitary sewer to September 30, 1928</b>	<b>2,572</b>	<b>4,414</b>	<b>809</b>	<b>7,795</b>
<b>Connected during the month .....</b>	<b>4</b>	<b>8</b>	<b>4</b>	<b>16</b>
<b>Total .....</b>	<b>2,576</b>	<b>4,422</b>	<b>813</b>	<b>7,811</b>

Meisic includes Tondo, San Nicolas, and Binondo.

Sampaloc includes Santa Cruz, Quiapo, and San Miguel.

Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL VIII

NOVEMBER, 1928

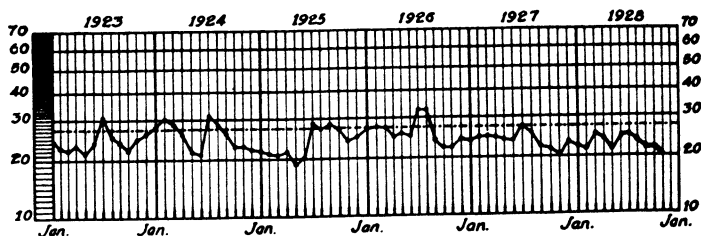
No. 11

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY of MANILA*



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1929

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M.D., *Chairman*  
 LEONCIO LOPEZ-RIZAL, M.D., *Member*  
 EUSEBIO D. AGUILAR, M.D., *Member*  
 TEOFILO CORPUS, M.D., *Member*  
 REGINO G. PADUA, M.D., *Member and Secretary*

## TABLE OF CONTENTS

	Page
A Survey of the Progress of Public Health Work in the Philippines during the Last Four Years, by Jacobo Fajardo, Director of Health	621
A Letter of Dr. Matthias Nicoll, Jr., to Dr. Jacobo Fajardo.....	632
Special Course for Health Officers.....	634
The Antidysentery Vaccine in the Control of Bacillary Dysentery Outbreaks in the Province of Antique.....	636
The Disappearance of Malarial Parasites in the Peripheral Blood Following the Administration of Plasmochin Compound.....	644
Hygiene of Clothing, Corsets, Hats, Shoes, and Handkerchiefs, by Dr. Teofilo Corpus .....	649
Noguchi Memorial in Cincinnati.....	652
The First Case of Rhinosporidiosis Reported in the Philippines, by Dr. Sixto Y. Orosa.....	654
Sixteen Rules of Health, by Dr. A. E. Stuht.....	655
Miscellaneous .....	656
General Statistics .....	659

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

NOVEMBER, 1928

No. 11

**A SURVEY OF THE PROGRESS OF PUBLIC HEALTH  
WORK IN THE PHILIPPINES DURING THE LAST  
FOUR YEARS**

By JACOBO FAJARDO, *Director of Health*

The present paper will try to visualize for you, in a brief way, the progress of public health work in the Philippines during the last four years. While it is intended that this will in no sense be a critical exposition of the subject, still it is felt necessary that a short résumé be made of the organization of the Philippine Health Service as obtained in 1924, so as to better appreciate the progress which has been made.

**ORGANIZATION AND PERSONNEL**

Our organization is of mixed character, partaking of the territorial and scientific types.

The Director of Health in his administrative and executive functions is assisted by a staff of officers composed of the chiefs of the different divisions and officers with the Council of Hygiene acting in an advisory capacity. There was an Executive Officer especially charged to see that the instruction and policies of the Director are carried out. He coördinates the activities of all offices and handles all questions pertaining to personnel; acts as liason officer with the Red Cross and other branches of the Government, and represents the Director on special boards. Health propaganda is a part of his duties and he keeps himself informed as to current public health legislation. The position of the Assistant Director of Health was practically abolished since 1925. The different division which were in operation in 1924 were those of provincial sanitation, metropolitan sanitation, hospitals, dispensaries and laboratories, communicable diseases, and sanitary engineering. The different offices were those of property, general inspection, personnel, records and finance, and vital statistics.

## HEALTH ADMINISTRATION IN THE PROVINCES

In 1924 there were 315 sanitary divisions occupied by 243 regular duly qualified physicians, 42 registered nurses and 30 *cirujano ministrantes* or sanitary inspectors, 3 assistant district health officers and 4 sub-district health officers. At present, there are 347 sanitary divisions or 32 more than there were in 1924 occupied by 301 presidents of sanitary division who are duly qualified physicians or 58 more than there were in 1924, 31 registered nurses, 15 *cirujano ministrantes* or sanitary inspectors, 7 assistant district health officers, 8 sub-district health officers, and 3 other health officers. While we have thus extended the organization of sanitary divisions into a larger number of municipalities and have consequently increased our medical, sanitary, and nursing personnel, we have exacted a more complete preparation in the duties which they were to assume by requiring prospective presidents of sanitary divisions to undergo, previous to their appointment, an administrative and scientific training. For this purpose, standard regulations governing entrances, promotions, transfers, and resignations of presidents of sanitary division have been drafted, including rules for those desirous of engaging in private practice or business. Refresher courses have been given regional as well as general assemblies have been held and finally to round out the instruction of health officers the School of Sanitation and Public Health conducted under the auspices of the University of the Philippines has been inaugurated two years ago.

The inspection work of district health officers in the different municipalities comprising the district have been standardized and the duties of assistant district health officers defined. Likewise the standardization of visits of the presidents of sanitary divisions to municipalities comprising their sanitary divisions have likewise been effected and a schedule for an annual district convention of sanitary personnel made. The morale of the personnel has been excellent and the few who have deviated from the straight path outlined for them have been disciplined according to the merits of each case by reductions in file, fines, suspensions, and dismissals.

## HEALTH ADMINISTRATION IN THE CITY OF MANILA

The City of Manila is administered under the Division of Metropolitan Sanitation. The city was reorganized into three health districts and one section of licenses created in lieu of

the five stations in operation at the beginning of 1924. Our achievements for the four-year period are as follows:

A sanitary survey of the health districts was performed and completed. The publication of the guide for the sanitary inspectors was made to systematize sanitary inspections. A slight flare up of cholera in 1925 was checked rapidly by means of intensive vaccination, in addition to other routine eradivative measures. Experiments in the laboratory of San Lazaro Hospital were made regarding the home treatment of water supply for drinking purposes. Water distribution in the homes by the *cargador* system has been improved: first, by the systematic monthly examination of the carriers; second, the inspection of containers; and, third, the adoption of a new model car for transportation and distribution.

A score card system has been adopted for the sanitary control of hotels, laundries, bakeries, groceries, restaurants, aerated water factories, ice cream parlors, barber shops, dairies, and stables. New regulations for the sanitary preparation and distribution of ice cream have been drafted. Likewise a new set of rules and regulations was enacted for the sanitary maintenance of public markets. The sanitary control of perishable food has been enacted an ordinance and likewise sanitary regulations for bakeries and bakery products. Another ordinance that has likewise been enacted was that declaring the storage of raw sugar and the preparation of toyo as offensive industries.

The sanitary maintenance of carnival grounds has been in charge of the division.

The city won second place in Clean Up Week from 1923 to 1925 inclusive, winning thereby the cash price of ₱15,000.

In 1926 clinics for babies were opened at the headquarters of the health districts for the treatment of beriberi. Immunization of dogs against rabies was adopted. A vibrio survey of Manila and environs was started and will be completed within five yeras.

Use was made for the first time of anti-dysentery vaccination with apparent success, and possibly contributed to a certain extent in the control of outbreaks and case recoveries. A set of regulations was promulgated for sterilizing milk bottles. The bacteriological examination of poultry eggs have been regulated and new regulations for the sanitary control of food handlers requiring in each case the production of a health certificate.

The sanitary maintenance of public-eating places had been the subject of new regulations.

Studies were made regarding a better distribution of garbage. A sedimentation tank has been required of stables.

Regulations were issued for the sanitary maintenance of railroad cars and vessels while travelling from one place to another. A new ordinance on the control of communicable diseases has been enacted by the Municipal Board.

In 1927 improvement of housing and overcrowding have been carried out, as well as the filling up low lands and the connection of houses to the sanitary sewage.

The control of carriers of intestinal parasites was undertaken. A survey of artesian wells located within the city limits was undertaken. Oyster beds have been protected. Regulations for the inspections of meat were drafted. An investigation on food poisoning was conducted. The tanneries at Palomar Park were closed. A survey on housing in the municipal district of San Nicolas was conducted, likewise a special campaign against illegal construction. Regulations for insanitary establishments were issued.

The following permanent sanitary improvements for the city remain to be done: (1) establishment of public fountains in playgrounds and parks; (2) purchase of new equipment for use of the mosquito, fly, and rat extermination brigade; (3) the substitution of the pail-midden shed by four stations with flush toilets; (4) cleaning and dredging of *esteros*; (5) construction of two modern crematories, one in the north and one in the south of the Pasig River; (6) filling up of low lands; (7) establishment of milk pasteurizing plant; (8) creation of an association for the building of sanitary homes for the poor.

In 1928 the following activities were undertaken, a survey over canned food-stuffs, investigations of carriers of communicable diseases; sanitation of the so-called nipa districts, sanitary control of swimming pools; instructions for better post-mortem diagnosis were issued; investigations in the conditions of lodging and boarding houses, hotels and dormitories; and a special survey of the barrios of Tanque and Panaderos were instituted. Studies were made regarding the division of the city into zones and a special survey of bakeries was conducted.

The activities of the Board of Food Inspection have been carried on as usual and infractors of the Pure Food and Drugs Acts were prosecuted. Progress in the activities of the Board



may be gleaned from the following comparative statistical figures: samples of imported foodstuffs sent to the Bureau of Science for examination were 428 in 1924, against 1,078 in 1928. As regards the samples of food submitted from the provinces it is to be stated that there was none in 1924, while for 1928, a total of 1253 samples have already been submitted for examination.

#### FINANCES

There had been no substantial increase in the appropriation for health purposes in the provinces whereas in 1924 ₱1,302,725.33 were expended in the provinces from the health fund; at the end of 1927 there were expended an average of ₱1,400,000 for the past three years.

The accumulated balances of the health fund are expended in establishing permanent sanitary improvements, such as dispensary buildings public midden sheds, laundry and bath houses, water works, water tanks and reservoirs, sanitary dug wells and incinerators. Leading in these various activities are Tayabas, La Union, Occidental Negros, Pampanga, Ilocos Norte, Misamis, Marinduque, Cebu, and Zamboanga. Sanitary inspectors or assistant inspectors in the provinces need to pass a qualified examination before appointed, their salaries fixed at not more than ₱30 a month.

Insular appropriations for the Philippine Health Service have steadily increased from ₱3,208,398 in 1925; ₱3,279,238 in 1926; ₱3,616,652 in 1927, to ₱3,730,426 in 1928.

#### SPECIAL ACTIVITIES

##### HEALTH PUBLICITY

The Section on Public Health Education and Publicity is entirely a new creation designed to disseminate information on public health and personal hygiene; to edit bulletins or journals and handle the preparation of statements, articles, and reports relative to the activities of the Service. The health-mobile demonstration were conducted in different places especially in connection with carnivals, provincial fairs and town fiestas. The publications of posters on health subjects and the publication of short articles on health topics is beginning to arouse public interest.

##### MALARIA CONTROL

The Malaria Control Division was started as section in 1926 with an appropriation of ₱25,000, with like amount contributed

by the Rockefeller Foundation. In 1927 and 1928, the organization was made practically independent of the Foundation. This section took over the field staff of the Rockefeller Foundation in general in 1927.

A laboratory service for malaria control is being conducted at the Central Office making the blood examinations, identifying *Anopheles* larvæ on adults and the dissection of adult *Anopheles* mosquitoes, etc. The section now converted into a division is composed of a chief, assistant chief, four physicians of field units, one chief field director and entomologist, two field directors at large, one entomologist, one chief technician, three technicians, one clerk and one chauffeur, one laboratory helper, and twenty-two control laborers. The field personnel is divided into units their being now five different ones in the provinces of Laguna, Mindoro, Lanao, Rizal, and Nueva Vizcaya in operation.

Malaria surveys were conducted in about 200 places showing spleen indices from 0 to 90 per cent and blood from 0 to 54 per cent. *Anopheles* surveys were also conducted and, so far, 15 different species of *Anopheles* have been found in the Philippines, with the significant finding that the *A. Minimus* is the only malaria transmitting species. While quinine has proved its worth in the treatment of certain phases of malaria, a new medicine called plasmochine compound has been tried with promise of greater success.

#### LEPROSY WORK

With a view to increasing the activities of the leprosy campaign it was deemed necessary to create a separate section under the division of hospitals, dispensaries, and laboratories. The main function of this section are: (1) to make studies and investigations relative to the epidemiology of leprosy; (2) to take charge of all leprosaria, treatment stations, detention camps, and their construction and maintenance; (3) to keep records and files of all individual lepers; (4) to follow-up all paroled lepers released from Culion, San Lazaro Hospital, and Cebu; (5) to pass upon all papers pertinent to leprosy work; and (6) to perform such other work that the Director of Health may assign. That the work against leprosy is bearing its fruits may be seen in the following number of lepers paroled year by year: 82 in 1923; 168 in 1924; 239, in 1925; 272 in 1926; 316 in 1927; and from January to September, 1928, 316.

Treatment stations and detention camps in line with the policy of treating lepers in its incipient and early stages the establishment of the treatment station at Cebu, Legaspi, and Iloilo, for the lepers of the Eastern Visayas, Bicol Region, and Western Visayas, respectively, are now under way. The Cebu treatment station is being constructed with the Leonard Wood Memorial Funds while those of Legaspi and Iloilo are from the provincial funds. It is expected that by the middle of 1929 all these stations will be in operation. The following detention camps were constructed during the period under discussion; Tacloban, Leyte; Aparri, Cagayan; Davao, Davao; Zamboanga, Zamboanga; and San Jose, Antique. Funds are available for the following detention camps: Iligan, Lanao; San Fernando, La Union; Cotabato, Cotabato; and Cagayan, Misamis. Detention camps are also maintained in Catbalogan, Samar; Surigao, Surigao; Jolo, Sulu; Bacolod, Occidental Negros; Romblon, Romblon; Capiz, Capiz; Naga, Camarines Sur; and Sorsogon, Sorsogon.

#### MEDICAL RELIEF

The division of hospital dates its creation with the approval by the Legislature of the Hospital Act of 1924. Much hospital construction, expansion, and improvement have been made and no less than 16 hospitals were added to our hospitals existing since then. Nine of these hospitals were constructed and are in operation under Act 3114 as amended by Act 3168, and the remaining seven were constructed and are being operated with provincial health funds and help from Insular Appropriations. The first group include big hospitals as those of Tayabas, Pangasinan, Occidental Negros, Laguna, and Batangas, and some smaller ones as those of Ilocos Sur, Nueva Ecija, and Bohol. The second group includes the emergency hospitals in Dipolog, Margosatubig, Iloilo, San Pablo, Ilocos Norte, Cervantes, and Bukidnon.

In addition to the above, five more hospitals will be constructed in accordance with Act 3114 as amended by Act 3168. These are the Pampanga Provincial Hospital of 30 to 50 beds, the Capiz Provincial Hospital of 20 to 30 beds, the Sorsogon Provincial Hospital of 20 to 30 beds, the Antique Provincial Hospital of 15 beds, and the Isabela Provincial Hospital of 15 beds. The necessary authority needed for the construction of these hospitals are already secured from the Governor-General and was made possible only through the passage of Act 3284, which

appropriates an additional amount of ₱500,000 for hospital purposes, and Act 3161 which provides that the Insular Aid for the operation and maintenance of hospitals to be constructed thereafter shall be included in the Insular Budget from year to year.

The Insular Psychopathic Hospital whose construction was begun in 1925 is now in operation. So that within the period under review, therefore, there are 22 hospitals whose facilities are being availed of by the public. Additional pavilions were constructed for San Lazaro Hospital, the Zamboanga General Hospital and the Davao Public Hospital. A nurses dormitory has been constructed for the Sulu Public Hospital. Appropriation for the construction of a new building for the Rizal Memorial Hospital and Bukidnon Emergency Hospital has been secured and the reconstruction of the Butuan Public Hospital building which has been damaged by the earthquake of 1923 as released this year. Standard dispensary buildings were built in Momungan, Lanao; Morong, Rizal; Ilaya, Dapitan; Parang, Sulu; Balamban, Cebu; Kabugao, Mountain Province; Sibul Spring, Bulacan; Maasin, Agusan; Badoc, Ilocos Norte; Pikit, Cotabato; and Victorias, Occidental Negros. Several are at present under construction located at Ligo and Bacay in Cebu; Batobato, Sulu; Gusan, Marinduque; Taytay, Panawan; Sandanan and Dipolog, Zamboanga.

Additional hospital facilities for provinces of the fifth and sixth classes will be made available, if the recommendations made in this connection are approved. The provinces to be benefited will be Abra, Bataan, Camarines Norte, Marinduque, Masbate, Romblon, Mindoro, and Zambales.

For purposes of economy and uniformity, a regulation has been issued standardizing the stock of drugs, medicines, supplies and equipments of hospitals and dispensaries. To further obtain economy in the construction of hospital buildings, under the Hospital Act, it was found necessary to abandon the old hospital plans by stages and to adopt, in lieu thereof, hospitals of the 15-to-20-bed, 20-to-30-bed, and 30-to-50-bed types. Important improvements were effected in the San Lazaro Hospital as follows: the installation of a new refrigerating and ice making machine supplying ice, not only to the institution but also to the Central Office of the Philippine Health Service and the health stations in the City of Manila; the installation of a dish-washing machine, and the provision of 100 iron beds to the inmates of the leper department in lieu of the old canvas beds.

### OTHER OUTSTANDING ACHIEVEMENTS

The Division of Communicable Diseases has undertaken the following campaigns:

1. Yaws.
2. Tropical ulcers.
3. Venereal diseases. Extension of the campaign to provinces, preference being given to ports and places where Constabulary barracks and army camps are located.
4. Typhoid and para-typhoid epidemiological investigation.
5. Cholera investigation.
6. The campaign against trachoma has been standardized and extended to many provinces amongst school children.
7. Continuation of goiter prophylaxis.
8. Intensification of anticholera vaccination.
9. Prophylaxis of dysentery by the use of antidysentery vaccine recently introduced by the Service.
10. Use to toxin, anti-toxin against diphtheria for volunteers among children.

Special investigation have also been performed on the following:

1. Dysentery together with diarrhea and enteritis, which is especially prevalent during rainy season.
2. Value of cholera drops in the treatment of cholera.
3. Investigation on the value of dysentery vaccination.
4. Shick's Test among school children.
5. Comparative study of different methods of smallpox vaccination with a view to select the best one applicable to the Philippines.
6. Beriberi investigation. Two investigations have been performed during 1927 and 1928. Reports submitted.
7. Typhoid investigation. Reports submitted.

The Division of Sanitary Engineering has undertaken inspections in Manila for the improvement of drainage and to determine conditions in all stables within the city limits with the coöperation of the Section of Licenses.

Mosquito control work was carried out more effectively by dividing the activity into two sections, the control of the house mosquito and the mosquito control in the field.

The campaign against rats and flies has been intensified. The division has urged improvements in the disposal of the City Wastes, although it has not succeeded completely, and the installation of garbage incinerators for disposing of the city garbage in a more satisfactory way than is conducted at present. During the year there were submitted to the City Engineer plans for improving the sanitary conditions of some of the most insanitary blocks in the district of Tondo.

The activities of the division have been extended to the provinces. Incinerators were built after the plans prepared at this Office in Laoag, Ilocos Norte; Bacolod, Occidental Negros; Culion Leper Colony; San Roque, Cavite; Zamboanga, Zamboanga; Pagsanjan, Laguna; Cebu, Cebu; and Iloilo, Iloilo. The sewage disposal has been investigated in Vigan, Ilocos Sur; Cavite, Cavite; and in Lilio, Laguna. The design of the plans for the supervision of construction of the sewerage system of the Santol Tuberculosis Sanitarium has been carried out. A special design of comfort stations for market places of San Fernando, Pampanga, was prepared and likewise the plan of the sewerage system of the new Insular Insane Asylum. Three types of public midden sheds of varying capacity were likewise designed for the Bureau of Education.

The selection of the site, preparation of sketches, showing rooms and other requirements and including the estimate cost of the Insular Insane Asylum was conducted by the division, likewise preliminary drawings of the contagious pavilions on San Lazaro have been made.

Many other designs and constructions were carried on by the division; the fountain for the Davao Public Hospital; the Father's Quarters at San Lazaro; the Zamboanga Tennis Court; and the sanitary model houses and sanitary barrios for Camarines. In Culion, the most important construction finished consisted in inter-barrio roads and the following: Employees' Quarters, Evangelical Home, Emergency Hospital No. 3, Nursing Aids Dormitory, the Yangco Invalid Dormitory, the conversion of the Children's Home to a Nursery, the Father's Quarters, and the extension of the water works system.

The laboratory department, San Lazaro Hospital, has been improved during the years 1927 to 1928 by additions to the building, increase in the number of personnel, and the acquisition of new equipment. At the present time, almost all the laboratory work which was previously made by the Bureau of Science is not handled by the Hospital Laboratory.

The construction of a new concrete pavilion of 24 beds was completed in August 1928. The construction of a negative house of lepers of 72 beds was completed in September of this year. Improvements of the grounds and gardens and in the different wards; repairs, painting and the opening of additional windows and the construction of office and clinic rooms in the leper department had been likewise carried out.

Inspite of many drawbacks many improvements had been introduced. The technical personnel was increased by addition of two specialists and several attendants. Besides the routine hydrotherapies measures already adopted new methods one of treatment were adopted. The aseptic menengitis treatment for cases of *dementia praecox*, the malaria treatment for general paralysis of the insane were both carried with encouraging results.

In the leper department the personnel has been increased, a small laboratory installed and a dispensary service conducted for non-resident patients, who prove bacteriologically negative in the surface tissues.

The office of the industrial hygiene, whose activities begun in 1924, has conducted surveys of all important industries in the Islands; namely, tobacco, oil, cement, fertilizers, sugar, printing press, mats, woolen hats, glass, tiles, rice mills canning, furniture, slippers, and so on. The physical examination of laborers and the examination of air and dirty factories were also performed. These works resulted in the improvement of unhygienic conditions in factories in general, and in the partial correction of the hazards and enhancement of the welfare of the laborers in these establishments. These surveys were also instrumental in counteracting the news spread in the United States that the Philippine coconut oil and tobacco products were manufactured under unhygienic conditions, with laborers suffering from loathsome diseases. As regards school medical inspection, the outstanding accomplishments of the office were: the standardization of school medical work throughout the Islands; school children were given injections against typhoid, cholera, and smallpox; an intensive campaign against trachoma was conducted; a sanitary survey has also been made of all the school buildings thruout the Islands; and model toilets have been introduced in the schools. Progress in public health nursing service was made during this period thru the standardization of the work of the provincial district nurse. These nurses are now directly supervised by the Central Office, thru the Section of Public Health Nursing.

#### NOTEWORTHY HEALTH LEGISLATION

The last four years saw the passage of three health laws of the most important character:

Act 3114—already mentioned—and subsequent amendments, providing for the construction of provincial hospitals with Insular Aid.

Act 3173, providing for the retirement of health officers after 20 years service and allowance of pension when injured or invalidated in the line of duty.

Act 3297, providing for the standardization of the salaries of district health officers.

There is no gainsaying the fact that the last two named laws have brightened the prospects of officers gone old in the Service and of those detailed in the provinces, thereby insuring continued efficiency and excellent morale.

#### CLOSING REMARKS

Heretofore, we have spoken only of our accomplishments. Of our failures—which are indeed many—volumes could be written, of course. We naturally choose not to do the writing ourselves. Suffice to say that we still have a long, long road to travel before the goal is reached, many a hard obstacle has to be hurdled over before we could honestly consider the day's work done. Yet, we face the future with determination, encouraged as we are with the lessons of our own mistakes and failures and heartened by the little and meager accomplishments of the past.

#### CONFERENCE OF STATE AND PROVINCIAL HEALTH AUTHORITIES OF NORTH AMERICA

ALBANY, N. Y., *January 2, 1929*

JACOBO FAJARDO, M.D.

*Executive Health officer, Manila, Philippine Islands.*

Dear Doctor FAJARDO:

With the rapid growth of the public health movement in this country, there has finally come a realization of the need for well trained health officers to conduct the work of public health in states, counties and cities. At the present time such men are not readily available, even for attractive positions. Notwithstanding the fact that there are a number of schools of public health which offer every advantage for training health officers, such schools are poorly patronized, in part due to the fact that too little advantage has been taken of the facilities available by those who are especially interested in the supply of health officers; namely, state and city health officers.

It has been my feeling for a considerable period that the members of the Conference of State and Provincial Health Authorities of North America should be the group most likely to



know of possible candidates who need or desire attendance on a short or qualifying course in public health. Such a course is described in the attached circular from the School of Hygiene and Public Health at Johns Hopkins University. It extends from March 13 to June 1, 1929.

This and other similar courses need suitable publicity in order to reach the attention of the persons who should enroll. Through the District State Health Officers in New York, I am endeavoring to reach such persons. Will you not do what you can to bring this matter to the notice of possible candidates of whom you may have knowledge or others through public announcements, so that at least ten men will enroll and make the course for 1929 a reality.

Very sincerely yours,

MATTHIAS NICOLL, Jr.  
*President of the Conference*

THE JOHNS HOPKINS UNIVERSITY  
SCHOOL OF HYGIENE AND PUBLIC HEALTH  
BALTIMORE, MARYLAND

Special Course for Health Officers, March 13 to June 1, 1929

In addition to the regular course offered by the School, it is proposed to offer during the third trimester of the present school year, provided a sufficient number of students make application, a course designed especially for health officers and other properly qualified persons now engaged in health work.

The primary purpose of the course will be to review and broaden the student's knowledge of those subjects underlying the practice of public health: Statistics, Epidemiology, Sanitary Engineering, and Public Health Administration, by means of special classes given throughout the course, and to acquaint the student with recent advances in the allied biological sciences, Bacteriology, Immunology, Protozoölogy, Entomology, Helminthology, Physiological Hygiene, Chemical Hygiene, and in the Filterable Viruses, by means of a series of lecture demonstrations by workers in these subjects. Instruction will be as far as possible by laboratory exercises and field demonstrations.

A tentative schedule for the course has been prepared, but changes in this schedule may be made to fit the course to the special needs of the students actually registered.

TENTATIVE SCHEDULE

	Mornings	Afternoons
Monday.....	Sanitary Engineering .....	Public Health Administration, 2 to 4.
Tuesday.....	Epidemiology.....	Special Lecture Demonstration, 2 to 3.
Wednesday.....	Sanitary Engineering .....	Conference, Personal Hygiene, 2 to 3.
Thursday.....	Statistics.....	Special Lecture Demonstration, 2 to 3.
Friday.....	Epidemiology.....	Public Health Administration, 2 to 4.
Saturday.....	Statistics.....	.....

Candidates for admission to the course must be graduates in medicine or have had such other scientific training as will fit them for the course. Each candidate must give evidence of having had adequate laboratory instruction in bacteriology.

The tuition fee for the course will be one hundred dollars, payable at the time of registration. A certificate of attendance

will be given those students who complete the course satisfactorily.

The course will be offered subject to the condition that not less than ten students have been accepted for admission prior to February 13, 1929.

Inquiries regarding admission to the course should be addressed to—

The DIRECTOR,  
School of Hygiene and Public Health,  
615 North Wolfe Street,  
Baltimore, Maryland.

## **THE ANTIDYSENTERY VACCINE IN THE CONTROL OF BACILLARY DYSENTERY OUTBREAKS IN THE PROVINCE OF ANTIQUE**

Epidemic outbreaks of dysentery during the rainy seasons have claimed year after year many precious lives in the Province of Antique, especially among our youngsters, that the people consider this disease as a necessary evil of our planting season, of which, there are no human means to prevent it; and when the first rains of the season come, the parents stoically begin to look at their children, thinking, perhaps, who will be the ones among them to pay the yearly toll of lives that dysentery usually claims.

Previous to 1928, the preventive measures adopted against dysentery consisted in the following: sanitary disposal of excreta, partial isolation of the patients, concurrent and terminal disinfection of the patients' homes, and the usual advise to the people to drink boiled water. In 1927, besides these measures, antidysentery vaccinations have been performed to a very limited scale among very few contacts, and in most cases only one injection was given. A total of 549 injections were made in that year, most of these were first injections.

In 1928, the same measures were adopted, advising however the people to drink not boiled water, but infusion of some aromatic herbs, as the people are reluctant to use boiled water on account of its taste. Besides these, a systematic vaccination against dysentery was started in January at Patnongon, this being the municipality more heavily infected during the previous years. Due to the small amount of vaccine received, only 68 injections were made (36 first injections and 32 second injections). In February, 1928, the same was done in Bugason, making a total of 104 injections (78 first injections and 26 second injections). In both instances, the injections were made among people in groups of houses in barrios where greater number of cases and deaths from bacillary dysentery were registered in previous years. In Bugason, the reluctance of the people to receive the total series of two injections, was the main cause of the very small number of second injections made during February.

In March, quite a large amount of vaccine was received; and while in other municipalities, a general propaganda of the use of the vaccine was being made, in Bugason and Patnongon, the two most heavily infected last year, antidysentery injections were made to a larger extent, making a total of 301 injections during the month. In the subsequent months, the number of injections made, increased progressively all over the province till the heavy rains came, thus 3,751 injections were made in April, 3,854 in May, and when the rain came in June, only 2,406 injections were made, 1,386 in July, and at the height of the rainy season in August, only 871 injections were performed, increasing again to 1,122 in September.

Did these measures give the coveted result? Figures in the statistical data can talk and give the answer.

However, in reviewing the results, it must be borne in mind that: First, the main aim was to do away with dysentery, amœbic and bacillary alike; Second, as the bacillary dysentery was the main cause of the heavy mortality during the rainy seasons in the province, especial attention was given to this type of dysentery in our campaign; Third, although all efforts were done to make a microscopical diagnosis of the cases in many instances, yet due to the difficulties of transportation in the province during the rainy season and the limited scope of our small laboratory, in a great number of cases, no microscopical examination of the feces could be done; Fourth, however, especial care was exercised in the diagnosis of the cases, and those reported as either amœbic or bacillary dysentery, were very carefully investigated by the presidents of sanitary divisions and oftentimes reinvestigated by the district health officer in the field, to ascertain, as far as possible, clinically the nature of the disease. No diagnosis of dysentery was accepted from the sanitary inspectors until the health officer has seen personally the case; Fifth, with the coöperation of the municipal authorities and barrio tenientes, and the frequent house-to-house inspections by the health personnel, and especially with the help and coöperation of the public, all cases suspect of dysentery were visited and carefully diagnosed, and if found so they were properly reported.

With this understanding, let us revise the result of the campaign, first, upon the general mortality:

TABLE A.—*Total deaths*

Months	Total deaths			Expected deaths
	1926	1927	1928	1928
January.....	168	216	225	210
February.....	193	209	225	220
March.....	190	254	224	210
April.....	160	195	202	199
May.....	242	226	227	243
June.....	242	410	251	259
July.....	421	412	328	354
August.....	532	378	291	395
September.....	293	246	235	244
Total.....	2,441	2,546	2,209	2,334

*Comparative Curves of Health Barometers for 1926, 1927, and 1928*

A glance on the data for June, July, August, and September in the above table and in the chart, suffice to convince anybody of the good result obtained in the campaign.

These results are more clearly appreciated if we compare the mortality from dysentery, amœbic and bacillary combined, during the past two years (1926–1927), and the expected deaths for 1928 with the reported deaths in 1928. The following table shows these:

TABLE B.—*Showing the total cases and deaths from dysentery and the expected deaths (amœbic and bacillary dysentery combined)*

Months	1926		1927		1928		Expected deaths, 1928
	Cases	Deaths	Cases	Deaths	Cases	Deaths	
January.....	1	1	10	9	2	1	3
February.....	4	4	21	15	2	0	6
March.....	0	0	11	9	5	2	6
April.....	0	0	7	6	2	1	6
May.....	7	7	29	12	3	1	6
June.....	13	13	234	85	8	1	24
July.....	60	60	270	132	31	16	73
August.....	135	135	142	70	28	20	74
September.....	32	32	28	14	12	6	19
Total.....	252	252	752	352	93	48	217

As can be seen in the above table, the incidence and mortality of dysentery have been greatly reduced in 1928 to such an



extent that the total number of cases from January to September this year can farvorably compare with the number of cases and deaths in August, 1926, or June, July, or August, 1927, taken separately, while the number of deaths is nearly five times lower than the expected deaths for this year.

Now, if we consider separately the result in the control of amœbic dysentery, we will observe that altho' the mortality in 1928 is lower than that registered in 1927, the difference between the mortality registered in 1928 and that in 1926, is almost unnoticed.

TABLE C.—Cases and deaths—Amœbic dysentery

Months	1926		1927		1928	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
January.....	0	0	5	4	2	1
February.....	3	3	15	10	2	0
March.....	0	0	8	6	4	1
April.....	0	0	5	4	2	1
May.....	4	4	10	6	3	1
June.....	4	4	72	24	8	1
July.....	8	8	67	41	27	12
August.....	21	21	78	26	17	14
September.....	5	5	19	7	7	1
Total.....	45	45	284	128	81	37

If the results of the campaign with regard to amœbic dysentery is but partially successful, the success in the control of the bacillary dysentery is simply striking, as can be seen in the following table.

TABLE D.—Cases and deaths—Bacillary dysentery

Months	1926		1927		1928	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
January.....	1	1	5	5	0	0
February.....	1	1	6	5	0	0
March.....	0	0	3	3	1	1
April.....	0	0	2	2	0	0
May.....	3	3	14	6	0	0
June.....	9	9	162	61	0	0
July.....	52	52	203	91	4	4
August.....	114	114	64	44	11	6
September.....	27	27	9	7	5	6
Total.....	226	226	493	231	21	17

We have taken the same preventive measures under the same circumstances as in the previous years, yet the mortality this year is much less than the two previous ones. What it is accountable for? We believe that to explain this, we should direct



our attention to the systematic antidysentery vaccination campaign made by foci, which is the only new measure introduced this year, and which is, we believe, the only most probable cause of this result.

To check up the result of the antidysentery vaccination we made, the name, sex, age, residence, and dates of injections were carefully recorded and cards arranged alphabetically by municipalities were prepared. Cases of bacillary dysentery found and properly diagnosed by the presidents of sanitary divisions were reported—the name of the patient, sex, age, and residence. All reported cases and deaths from bacillary dysentery were scrupulously checked, the former with the aid of the list reported and the later with the help of Provincial Form No. 75, in order to avoid as far as possible, any error, such as reporting a case twice or not reporting the exact number of cases in Provincial Form No. 186. Then, the names of these cases and deaths reported were carefully searched among the names in the cards of vaccinated persons. Furthermore, a great majority of those injected with antidysentery vaccine were visited from time to time by the health personnel to inquire whether a case of dysentery among them has been registered.

The results were: first, that the cases and deaths from bacillary dysentery were registered in the municipalities of Patnongon, Bugason, San Remigio, Lawaan and Valderrama. In these municipalities the disease broke out in places where the vaccination campaign was not carried on before, because of lack of time, or if it was carried on, only a few were vaccinated because the personnel have encountered great obstacle in the reluctance of the people to submit to vaccination.

However, in the barrios of Aureliana (Patnongan), Igbalangao (Bugason), and Tigmamale (Valderrama) where the danger of spreading the disease was great, the district health officer with the chief sanitary inspector Mr. Manjares made a thorough antidysentery vaccination with the help of the local health personnel and about 80 per cent of the total population of these barrios received the full dose of the vaccine; and disease almost immediately disappeared.

Of the 21 cases reported in the whole province, only one has received one injection of the vaccine last May and was taken sick in August, almost at the same time with her younger brother of 2 years of age, who did not receive injection of the vaccine, because the parents refused on account of the tender

age of the child. The girl who received the injection in May easily recovered, while the younger one died after few days of illness.

Among the 17 persons who died from bacillary dysentery during the year, not a single one was injected with antidysentery vaccine.

The attitude of the people at the beginning of the campaign was very discouraging, they frankly opposed the injections in spite of the valuable help of the municipal authorities who heartily coöperated with us. But when the people realized, first, that the vaccine was followed by no troublesome general reactions, and lately that the effect as a preventive measure is quite positive, they voluntarily submitted to vaccination, preferring the antidysentery vaccine to the mixed or pure anti-cholera or typhoid vaccines, because of the general reactions that follow that latter.

We consider it a great injustice to our personnel if we fail to mention here their self-sacrifice and devotion to duty, as during the last three quarters of the year, besides the 13,562 antidysentery injections they performed, they made 4,704 mixed antityphoid and cholera vaccinations, 3,318 pure cholera vaccinations, 22,532 antismallpox vaccinations and of these 13,478 were inspected. Most of this work was done by only 12 sanitary inspectors (data from Caluya are not included here, being incomplete); while on the other hand, the five presidents of sanitary divisions and the district nurse have taken the pain in visiting all the patients suspect to dysentery, disregarding the distance and the weather in order to obtain a more accurate diagnosis, proper treatment and care of the patients. All this work was done without abandoning their routinary duties under the most unfavorable weather condition that reigned during the last quarter (July to September).

#### SUMMARY

(a) Dysentery, especially the bacillary type, has been a regular visitor of the Province of Antique during the rainy season (June to September), causing very high mortality during the past years;

(b) Except the systematic antidysentery injections by foci, the measures adopted this year as well as the prevailing conditions are sensibly the same to those in the previous years.

(c) While the result with regard to amœbic dysentery is practically unnoticed, with regard to the bacillary dysentery is simply striking; the antidysentery vaccination, apparently, was the deciding factor of this result.

(d) Of the 21 cases bacillary dysentery registered during the year 1928 (January to September) one, who received only one injection of the vaccine in Many, was taken sick in August and easily recovered after a few days' illness; the others did not receive any injection. Of the 17 deaths not a single one was vaccinated.

(e) The people prefer to be injected with antidysentery vaccine, because of the absence of general unpleasant reaction that usually follows the antityphoid or cholera vaccines.

# THE DISAPPEARANCE OF MALARIAL PARASITES IN THE PERIPHERAL BLOOD FOLLOWING THE ADMINISTRATION OF PLASMOCHIN COMPOUND

By Dr. CRISTOBAL MANALANG

*Chief, Division of Malaria Control*

and

Dr. SALUD S. BERNARDO

*Physician-Bacteriologist, San Lazaro Hospital Laboratory*

The clinical observations with Plasmochin Compound have proved that this synthetic drug acts in an effective way on the parasites of the various forms of malaria. This drug has been tried in different localities using tablets of .01 grams Plasmochin with 0.125 gram. Quinine Sulphate and its effect on the different kinds of malaria are as follows:

From July 18th to August 2nd, 1928, Dr. C. Manalang tested this drug in three places in the Province of Tayabas, using the following doses:

Children up to 10 years—2 tablets daily, one in the morning and one in the afternoon.

From 10 to 15 years—4 tablets daily, two in the morning and two in the afternoon.

Adults—six tablets daily, three in the morning and three in the afternoon.

Physical development of the children changed the above dose in some cases.

Examination of 29 children at the barrio school of Mayit of both sexes from 5 to 13 years old showed 10 or 34 per cent with splenic enlargement, the largest spleen reaching midway between the costal margin and umbilicus. Thick and thin smears of blood on subsequent examination showed two with Tertian Schizonts and one with Estivo-Autumnal gamete or an index of 13 per cent. All were treated. On the seventh day of treatment smears were taken from all and all resulted negative. One positive case was absent but resulted negative on the 14th day. On the 14th day of treatment smears were all negative. The treatment was interrupted in all on 10th, 11th, and 12th days of treatment due to exhaustion of the drug. No complaints of cyanosis or any untoward effects were received or noted during the period of treatment.

At the distillery of Mayit 46 people of both sexes and ages from 1 to 60 years of age were examined of whom 22 or 48 per cent had varying degrees of splenic enlargement from those palpable on inspiration to those beyond the umbilicus. Blood smears on subsequent examination showed four with crescents, four with tertian gametes and quartan (bandform) and four tertian schizonts or a blood index of 28 per cent. All were treated and instructed to report to the distillery morning and afternoon to receive and inject the pills. On the seventh day smears were again taken. It was found that all took treatment but rather irregularly except one, due to bad weather. Those with positive bloods took from 2 pills the case of an infant of 1 year to an average of 18 to 27 pills among adults. The seventh day smears were all negative. Two positives were absent, a quartan and a tertian—these were negative on the 14th day examination. On this day all the smears were also negative. A crescent case already negative on the seventh day did not show up. No ill effects were complained of except ringing ears among few. On the contrary some of the laborers reported better appetite and less tendency to fatigue. Those that complained chill and fever before treatment reported their disappearance. There were even noticeable improvement in the color of some anemics.

Three classes with a total 129 children mostly under 10 years in the primary school of Tayabas municipality showed 48 enlarged spleens or 38 per cent, two of these spleens were beyond the umbilicus. All were treated. Subsequent examination of the smears taken before treatment showed 20 or 15.5 per cent positives. Of these 7 were crescents, 4 tertian gametes, 1 quartan, and the rest schizonts. On the seventh day all smears were negative. Two blood positive cases were absent. Their blood on the 13th day were negative. On the 13th day all smears were negative. The treatments of these 129 children were regular except during one Saturday and two Sundays.

#### COMMENTS

1. The results of these tests show unexpected and surprising results, namely, apparent sterilization of all parasites (of all species) carriers, after six days of treatment with plasmochin compound in the doses given, whether the drug was taken regularly or not.

2. The negative cases remained negative during the period of observation.

3. No untoward effects were observed or complained of, on the contrary improvements, subjective and objective were observed.

4. Were it possible to examine the cases microscopically daily or every other day it may be that parasites disappeared before the seventh day.

5. Were it possible to employ different doses at different intervals it may be that less drug may be needed to cause disappearance of the plasmodia. The number of cases did not justify these trials.

6. These results justify further trials of the drug with a view of its use in mass treatments in malarious districts for the control of malaria by attack on the plasmodia. This will be especially applicable in penal and agricultural colonies or plantations where incoming people could be controlled. In other localities it may have to be combined with larvae control. The cost is relatively less than quinine especially with the present quotation at ₱0.04 per tablet in cans of 25,000.

Dr. Salud S. Bernardo tried the effect of Plasmochin Compound on malarial parasites in the peripheral circulation in patients admitted to the San Lazaro Hospital beginning August 15th up to September 20, 1928, giving to adults one tablet three times a day and to children one-half the adult's dose. Thick and thin smears were taken every other day using the thick smear for control. When the blood is found negative for malarial parasites this treatment is continued for 3 days more after which patients are discharged.

The following table shows the protocol of the 53 cases observed:

Patients	Sex	Age	Type and stage of parasite	Number of days of treatment to produce negative
		<i>Years</i>		
1. M. V. ....	Female...	47	Tertian—schizont.....	1
2. C. A. ....	Female...	15	Tertian—ringform.....	1
3. E. B. ....	Male.....	23	Estivo-Autumnal.....	9
4. F. C. ....	Male.....	20	do.....	9
5. G. M. ....	Female...	22	Tertian—Schizont.....	2
6. V. M. ....	Male.....	21	Estivo-Autumnal—gamete.....	9
7. E. R. ....	Male.....	21	Estivo-Autumnal—ringform and gamete.....	5
8. A. C. ....	Male.....	35	Estivo-Autumnal—gamete.....	2
9. A. J. ....	Male.....	9	Estivo-Autumnal—ringform and gamete.....	6
10. V. R. ....	Male.....	18	Tertian—schizont.....	5
11. F. T. ....	Male.....	28	Estivo-Autumnal—gamete.....	3
12. T. C. ....	Male.....	29	Estivo-Autumnal—ringform and gamete.....	4
13. V. C. ....	Male.....	14	Estivo-Autumnal—gamete.....	3
14. J. M. ....	Male.....	1-6	Tertian—ringform.....	4
15. M. P. ....	Male.....	24	Tertian—schizont.....	4
16. R. S. ....	Male.....	28	Tertian—ringform.....	2
17. I. M. ....	Male.....	28	Estivo-Autumnal—gamete.....	2
18. M. B. ....	Male.....	16	Tertian—schizont.....	2

Patients	Sex	Age	Type and stage of parasite	Number of days of treatment to produce negative
19. R. A.	Male	22	Tertian gamete	1
20. E. P.	Female	20	Estivo-Autumnal gamete	3
21. A. M.	Male	3	Estivo-Autumnal ringform and gamete	6
22. F. D.	Male	16	Tertian ringform	10
23. F. G.	Male	28	Estivo-Autumnal ringform and gamete	3
24. J. A.	Male	19	Estivo-Autumnal gamete	6
25. E. C.	Male	33	do.	9
26. S. C.	Male	28	do.	4
27. F. T.	Male	24	Estivo-Autumnal ringform and gamete	10
28. S. C.	Male	40	Estivo-Autumnal gamete	7
29. I. P.	Male	45	Estivo-Autumnal ringform and gamete	13
30. A. G.	Male	18	Tertian ringform	3
31. B. C.	Male	29	Estivo-Autumnal ringform	3
32. G. G.	Male	19	do.	2
33. C. V.	Female	19	Tertian schizont	3
34. P. A.	Female	25	Estivo-Autumnal ringform	1
35. A. M.	Male	17	Estivo-Autumnal ringform and gamete	12
36. F. J.	Female	19	Tertian ringform	12
37. T. S.	Female	17	Tertian ringform	3
38. M. S.	Male	18	do.	
39. R. A.	Female	28	Estivo-Autumnal ringform and gamete	12
40. B. C.	Male	21	Tertian ringform	1
41. E. A.	Male	25	Estivo-Autumnal gamete	6
42. C. M.	Male	24	Tertian schizont and ringform	10
43. C. E.	Male	2	Estivo-Autumnal ringform and gamete	6
44. S. G.	Female	13	Tertian schizont	7
45. M. G.	Female	19	Estivo-Autumnal ringform	7
46. F. P.	Male	17	Estivo-Autumnal ringform	5
47. A. P.	Male	19	Estivo-Autumnal ringform and gamete	9
48. G. V.	Female	32	Estivo-Autumnal ringform and gamete	
49. F. J.	Female	13	Tertian schizont	6
50. I. E.	Male	23	do.	6
51. S. P.	Male	22	Tertian ringform and schizont	3
52. Z. J.	Female	23	Estivo-Autumnal crescent	3
53. G. C.	Male	33	Tertian schizont	6
				4

Out of the 53 cases, 34 were adult males, 15 were adult females, and 4 were children.

### Summary :

[illegible]

Estivo-autumnal ring-form and gamete		Estivo-autumnal gamete		Estivo-autumnal and gamete		Estivo-autumnal gamete	
Tertian-ring		Tertian-ring		Tertian-Schiz		Tertian-Schiz	
1	6 days	1	12 days	1	6 days	1	5 days
1	12 days	.....	.....	.....	.....	.....	.....

The above 53 cases show an average of less than 6 days of Plasmochin Compound treatment to produce negative.

*Observation on Effect of Plasmochin Compound Treatment.*—In all these patients the blood persisted to be negative during the last three days of treatment after the first negative is obtained. No one complained of *tinnitus aurium*, cyanosis, or gastralgia showing that 0.03 gram of Plasmochin daily is well tolerated by patients. They became afebrile soon after the drug was given even if the blood persisted to be positive some days later.



## **HYGIENE OF CLOTHING, CORSETS, HATS, SHOES, AND HANDKERCHIEFS**

By Dr. TEOFILO CORPUS

*District Health Officer, Bulacan*

Clothing plays an important part in keeping the body well. With the use of proper clothing, the incidence and mortality rate from respiratory diseases may, to a certain extent, be minimized. Of about 76,000 deaths from influenza in 1918 and 1919 in the Philippine Islands; of the 30,000 deaths from pulmonary tuberculosis and of more than 1,000 deaths from bronchitis every year, I do not doubt that a certain percentage of them has been contracted due to insufficient or excessive use of clothing.

Clothing need not be luxurious, but clean and plain. It should not contain poisonous dyes, and the underwear should not be filthy.

It must be borne in mind that clothing is primarily for decency, adorns a person, conserves the body temperature, and protects the individual from the rays of the sun, winds, rains, injuries, and discomforts.

Several materials are used, namely, cotton, linen, silk, woolen, rubber, leather, fur, and felt. In tropical countries, cotton, linen, and silk are commonly used, woolen in temperate countries, and fur in the Frigid Zone.

You may recall that black cloth absorbs heat the greatest, and white the least. The dark shades of blue, green, red, and yellow also absorb heat. Heat is reflected mostly by white and also the light shades of yellow, red, green, and blue. The undergarments which are not exposed to the sun do not exercise any influence whatever. This is the reason why we use white clothing, and also light colored clothes in tropical countries, because they are best conductors of heat. Wool, being the poorest conductor of heat, is adapted in cold countries.

It is also true that the looser the texture of clothing, the greater the amount of air in the interstices. Because air being a very poor conductor of heat, a loosely woven fabric prevents the loss of body heat in a still air more than one of a closer texture. Thus, it is true that a thin loosely woven garment

of woolen is warmer to the body in a still cold atmosphere than an equal amount of closely woven material of the same kind. The same result is attained by wearing a number of garments one over the other. The point that I wish to bring out is that we will naturally feel comfortable if we use loosely woven clothing if there is a constant motion of air in our surrounding. However, during the time where there is a still air, no matter whether we use the loosely-woven clothing or the closely-woven one, we will be subjected to the same discomforts of weather condition.

Another point that I wish to bring out is the hygroscopic property of woolen, because this has something to do with health. If subjected to rain, one wearing linen clothes feels wet sooner than that wearing woolen clothes. The reason is that particles of water are deposited between the interstices of the fibers, and they come directly in contact with the body. In case of woolen clothes, the particles of water are deposited in the substances of the fiber—this being the hygroscopic property of wool, and they do not directly come in contact with the body. This is why we use woolen cover immediately after an active exercise to prevent chilling and exposure of the body to cold. This will also prevent rheumatism, digestive disturbances, and “colds.”

In hot weather, woolen is inferior as outer-garments to cotton and linen, which being better conductors and reflectors of heat, keep the body cool. But for undergarments, wool is much better as a protection against chilling after an active exercise. Silk, being a poor heat conductor, will not keep the body cool. It will not also clean perspiration.

The shoes should be adopted to the feet and not the feet to the shoes. Shoes should not cause any malformations of the feet. They should give free movement, but not chaffing and excoriations. Low-heeled shoes gives comfort. High-heeled shoes do not give comfort in walking. The only object is to increase the height of an individual and diminish the size of the feet. High-heeled shoes also change the center of gravity of the individual. Rubber shoes give heat to the feet, and should not be used unless during the rainy and cold season of the year.

The handkerchiefs should not be used for dusting shoes, floors, and seats. Corsets should not be used, as this will restrict the movements of the chest and displace the internal organs. They may cause disease of the organs affected.

From the standpoint of health, the practice of doing away with the hats among the young people is bad for their health. The hats serve as protection for the head—from accident, heat, cold, rain, etc. Without the hats, the heads are constantly exposed to the changes of temperature. The inclement changes of weather may cause colds. These colds may lead to debilitated condition of the body, and hence the danger of contracting diseases of any kind. If we wish to keep our health well, we should use our hats.

## NOGUCHI MEMORIAL IN CINCINNATI

Cincinnati will honor the memory of Dr. Hideyo Noguchi at a memorial service on Sunday afternoon, November 18, at 3 o'clock in one of Cincinnati's large auditoriums. A joint committee representing the Academy of Medicine, the College of Medicine of the University of Cincinnati, and the Public Health Federation, the latter of which is made up of all the public and private health agencies of the city and county, are sponsoring the memorial and preparing a program national in scope. Invitations have been extended to Federal and State government, the United States Public Health Service, the American Medical Association, the American Public Health Association, the Army and Navy, the American College of Physicians, the American College of Surgeons, the surviving members of the Yellow Fever Commission, the surviving members of the Typhoid Fever Commission and the medical and scientific schools of the country, all of whom are invited to send representatives.

Outstanding figures in medical science will come to Cincinnati on that date to address the great public meeting which is being planned. It will be opened to the entire public with a view to carrying home the message of the great contribution that science makes to the public weal as well as doing honor to this great peace-time hero. "The Significance of Noguchi's Work to the World" will be the subject of an address by Dr. Frank Billings, national authority in the field of internal medicine. The Mayor of Cincinnati, the Honorable Murray Seasongood, one of the most colorful figures in American city government today, will, it is expected, preside at the meeting. The Rev. Frank H. Nelson, Pastor of Christ Church, Cincinnati, will give the invocation. Miss Hizi Koyke, Japanese grand opera star, has generously volunteered to sing. The Hon. S. Sawada, Counsellor of the Japanese Embassy, will represent his country on the speaking program. Acting President, Herman Schneider of the University of Cincinnati, has placed before the Board of Trustees of the University a recommendation that a posthumus degree be conferred upon Noguchi on this occasion.

Probably no single individual in modern times has made so great a contribution toward the control of disease as this eminent Japanese scientist. Doctor Noguchi died as he lived, devoting himself to his scientific studies on behalf of mankind. He

was in Africa studying yellow fever in an effort to find out the relation between the disease in Africa and the disease as he had known it in South America. His tragic end came on the twenty-first of May, as he himself fell a victim of the plague that he endeavored to exterminate. In 1910, as a member of a Yellow Fever Commission sent by the Rockefeller Foundation to Ecuador, he succeeded against great odds in virtually exterminating the disease in that country. Among his contributions, we may cite such as the discovery of a small-pox vaccine free from bacteria, the discovery of the microörganism responsible for infantile paralysis, the isolation of the causative germ of trachoma, demonstration of the kinship between syphilis and paresis, and the cultivation of the rabies parasite.

The members of the joint committee sponsoring the meeting are the following: representing the College of Medicine: Dr. Dennis Jackson, Dr. Shiro Tashiro, Dr. Victor Greenebaum, Dr. Frank B. Cross, Dr. Stanley Dorst, Dr. A. P. Matthews and Dr. A. C. Bachmeyer; representing the Academy of Medicine: Dr. T. A. Ratliff, Dr. N. C. Foot, Dr. Wm. B. Wherry, Dr. Samuel Iglauer, Dr. Carey P. McCord, Dr. Wm. Mithoefer; representing the Public Health Federation: Dr. Julien E. Benjamin, Mr. Martin Low, Mr. Murray Shoemaker, Mr. Max Senior, Dr. Wm. H. Peters, Dr. Elizabeth Campbell, Mr. Omar Caswell, Mr. Bleecker Marquette, and Dr. Carl Wilzbach.

The Cincinnati committee cordially invites physicians, scientists, and officials of public and private agencies to come to Cincinnati to participate in this great memorial service.

## THE FIRST CASE OF RHINOSPORIDIOSIS REPORTED IN THE PHILIPPINES

By SIXTO Y. OROSA, M.D.

*Chief, Occidental Negros Provincial Hospital*

According to Circular No. 305 of the Philippine Health Service, dated November 7, 1928, the first case of rhinosporidiosis "has been found in the Philippines as a result of the pathological examination of a nasal polyp submitted to this office by the Occidental Negros Provincial Hospital."

The history of the case as written by the specialist of the Occidental Negros Provincial Hospital is as follows:

September 13, 1928. General Remarks. This is a male boy patient, single, well built and fairly nourished, able to be up and about. He came with the complaint of a reddish growth which plugs his left side of the nose. The trouble began since about two years ago. The heart and lungs are "O. K." The case was diagnosed as "nasal polyp, left."

The name of the patient is Guillermo Quinto, Filipino, 7 years old, residing at Hacienda Catalina, Talisay, and was admitted on September 13, 1928, and was assigned to the free ward. The parents are laborers by occupation.

The urine was normal, and the stool showed ascaris and trichuris ova. The coagulation time was  $3\frac{1}{2}$  minutes.

Upon the request of the hospital specialist the writer operated on the patient on September 18, 1928. The polypous growth was excised, and the nares was packed. The writer suspecting that the nasal growth was not of the ordinary nasal polyp, submitted the specimen to the Central Office of the Philippine Health Service, Manila, and the report came as "Rhinosporidium infection."

## SIXTEEN RULES OF HEALTH

By A. E. STUHT, M.D.

*State of Washington Director of Health*

1. Ventilate every room you occupy.
2. Wear light, loose, and porous clothes.
3. Seek out-of-door occupations and recreations.
4. Sleep out-of-doors, if you can.
5. Avoid overeating and overweight.
6. Avoid excess of high protein foods, such as meat, flesh foods, eggs, also excess of salt and highly-seasoned foods.
7. Eat some hard, some bulky, some raw foods daily.
8. Eat slowly and taste your food.
9. Use sufficient water internally and externally.
10. Secure thorough intestinal elimination daily.
11. Stand, sit, walk erect.
12. Do not allow poisons and infections to enter the body.
13. Keep the teeth, gums, and tongue clean.
14. Work, play, rest, and sleep in moderation.
15. Breathe deeply; take deep-breathing exercises several times daily.
16. Keep serene and whole-hearted.

## MISCELLANEOUS

---

### BATANGAS

Important works accomplished during this month were: extensive sanitary campaign in towns and in the barrios; general disinfection of public markets and closets; 136 Antipolo closets were being repaired and constructed; 210 persons were given injections with pure cholera, 343 persons with pure typhoid, and 644 persons with mixed vaccine; 16 schools were inspected and 990 school children were physically examined, and 30 conferences were given by presidents of sanitary divisions and district nurses. Majority of which were held in the barrios.

### CEBU

The general health and sanitary condition of all the towns visited during the month was found satisfactory, and the works of the personnel were also satisfactory in spite of some difficulties found in the submission of reports and its accuracy.

### MASBATE

The outstanding achievement accomplished during the month were the following:

The purchase from the local merchants of the nipa, lumber, and other materials for the leper detention house. Lecture to the local midwives in the puericulture center. Toilet and yaws survey and treatment of yaws and leprosy patients. Several health lectures given by the personnel in several municipalities and barrios. Injections and vaccinations of school pupils and their physical examination and treatment.

### PANGASINAN

Upon investigation by the district health officer, it had been found that some markets and slaughterhouses were dirty and more laborers were requested. Attention of personnel was called to unused vaccines. Vaccination with mixed and pure vaccine ordered in Burgos due to isolated cases of Typhoid. Liberal distribution of quinine in Mañgatarem, Balin-caguin, Sual, and Burgos had been advised due to increase of malaria cases.

### SAMAR

One of the most important events accomplished this month were: the inspection of the proposed site for the Catbalogan public market; inspection of the Roman Catholic Cemeteries of Catubig, Villareal, Pambujan Norte, Allen and Catbalogan, inspection of the primary and secondary schools of Palapag. Physical examination of a woman reported by anonymous letter of leper suspect, investigation of the acting President, 4th Sanitary Division, Mr. Esteban M. Lentejas, alleged to have participated of the last election.

### ANTI-DIABETES PLANT FOUND

A plant of common growth in the Philippines has been discovered to be an excellent medicine for diabetes by Dr. Isabelo Concepcion, head



of the Department of Physiology and Biochemistry at the College of Medicine, University of the Philippines.

The name of this plant, it was learned, is *Vaccinium mystoides* (Blum), otherwise known in Ilocano dialect as "Alemani," in Bontoc dialects as "Ayuman," and to Igorot dialect as "Gutness." It is reported that this plant grows extensively in Tayabas, Laguna, Albay, and Mt. Halcon.

Doctor Concepcion found this plant more effective than "duhat" and other fruits possessing curative power against diabetes, in lowering blood, sugar and in reducing gycosmia.

#### P. I. CHILDREN COMPARE WELL WITH AMERICAN

After a careful study of the psychological development of Filipino Children, Drs. Jose A. Albert and Teodoro Arvisu have found that Filipino children compare favorably with American with regard to mental development.

The following is the summary of their investigations:

1. Under the same circumstances, the Filipino children compare favorably with American with regards to their mental development.

2. A comparative study between Table III and Table IV gives the following results:

(a) The Filipino children are slightly heavier than the American.

(b) The circumference of the head of the Filipino children is smaller than that of the American. This difference ranges from  $\frac{1}{2}$  to 3 centimeters.

(c) The circumference of the chest of the Filipino children is the same as that of the American.

(d) The height or length of the Filipino children is lower than that of the American. This difference ranges from 2 to 10 centimeters.

3. The temporary teeth of the Filipino children are greater in number than those of American after the age of 12 months.

#### ASK EXTENSION OF SEWERAGE

The extension of the sewerage and drainage system so as to cover the entire City of Manila, will be urged on the Metropolitan Water District by the Council of Hygiene.

It was said that whatever the vigilance the health service can observe to control the typhoid situation in the city, this disease will always prevail as long as the present drainage and sewerage system is not extended to over the city.

#### PHYSICAL TEST FOR TEACHERS

All teachers in the service and applicants for teaching positions will have to undergo physical examination, according to orders of Director Bewley of the Bureau of Education.

The purpose of physical examination is to prevent the employment of teachers suffering from contagious diseases.

#### NOTICE

With rare exceptions hotels in Europe refuse to give the address of American or English doctors endeavouring always to have the hotel doctor employed, who they claim speaks english perfectly. When this doctor

arrives, if he speaks English at all, it is usually so poorly that the patient does not fully understand him and he feels that the doctor has not fully understood what has been said to him, and is consequently irritated and alarmed and his trouble aggravated.

To overcome this boycott, the "Continental Anglo-American Medical Society" was organized in 1885 and in 1889 commenced the publication of a list of the Anglo-American doctors practicing in Continental Europe and Northern Africa; and wishing to establish the closest relations possible with their colleagues in America and England, will send a copy of this list free of charge, to anyone applying to the Secretary Dr. Sherwood-Dunn, 54 Bd. Victor Hugo, Nice, France.

## GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of November, 1928]

### ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR, 1928<sup>1</sup> BY NATIONALITIES

Nationality	Population
Americans.....	3,134
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
<b>Total.....</b>	<b>324,522</b>

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

### ESTIMATED POPULATION—CONTINUED BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
<b>Total.....</b>	<b>129,181</b>
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
<b>Total.....</b>	<b>113,678</b>
<b>No. III, PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,347
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,987
14. Santa Ana.....	6,761
<b>Total.....</b>	<b>81,663</b>
<b>Grand total.....</b>	<b>324,522</b>

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS NOVEMBER, 1928**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	760.63	25.5	32.4	8	20.5	3	29.0	29.2
11-20.....	60.01	25.0	32.4	17	21.3	11	28.9	29.2
21-30.....	55.50	25.7	31.4	21	22.5	30	28.4	28.5

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	82.9	90.5	7	76.6	2
11-20.....	82.0	86.9	16	79.2	14
21-30.....	82.7	89.7	26	71.4	22

Date	Prevailing direction	Wind			Atmidometer <sup>2</sup> (Open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	NE quad.	910.5	121.0	4,10	24.6	4.1	9
11-20.....	NE	1,193.5	172.0	17	28.8	3.6	14,17
21-30.....	Variable	3,388.0	71.80	24	24.9	4.9	22

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	59 00	9 50	2	32.4	5
11-20.....	75 55	10 30	14	15.3	1
21-30.....	36 50	10 15	30	69.8	6

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity, -1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	3	9	12	46.62
Filipinos.....	606	505	1,111	45.35
Spaniards.....	3		3	18.68
Other Europeans.....				
Chinese.....	26	21	47	32.04
All others.....	5	3	8	44.55
Total and average.....	643	538	1,181	44.31

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MEJISIC:</b>							
1. Tondo.....	138	131	269	8	7	15	284
2. San Nicolas.....	21	22	43	2	.....	2	45
3. Binondo.....	19	14	33	1	.....	1	34
Total.....	178	167	345	11	7	18	363
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	108	86	194	9	6	15	209
5. Quiapo.....	24	22	46	3	.....	3	49
6. San Miguel.....	4	7	11	.....	.....	.....	11
7. Sampaloc.....	117	86	203	8	12	20	223
Total.....	253	201	454	20	18	38	492
<b>No. III, PACO:</b>							
8. Port Area.....	1	1	2	.....	.....	.....	2
9. Intramuros.....	26	25	51	1	.....	1	52
10. Ermita.....	34	20	54	.....	.....	.....	54
11. Malate.....	61	42	103	1	1	2	105
12. Paco.....	31	33	64	2	1	3	67
13. Pandacan.....	6	4	10	.....	3	3	13
14. Santa Ana.....	18	14	32	.....	1	1	33
Total.....	177	139	316	4	6	10	326
Grand total.....	608	507	1,115	35	31	66	1,181

Attended by physicians, living 409; stillbirths, 29.

Attended by midwives, living, 89; stillbirths, 2.

Attended by families, living, 683; stillbirths, 15.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

[Stillbirths not included]

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....	2	1	3	11.65
Filipinos.....	273	240	513	20.94
Spaniards.....	1	.....	1	6.23
Other Europeans.....	.....	.....	.....	.....
Chinese.....	15	2	17	11.59
All Others.....	2	.....	2	11.14
Total and average.....	293	243	536	20.11

**NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA  
BY DISTRICTS**

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MANILA:</b>			
1. Tondo.....	93	78	171
2. San Nicolas.....	20	10	30
3. Binondo.....	8	2	10
Total.....	121	90	211
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	53	38	91
5. Quiapo.....	17	12	29
6. San Miguel.....	3	1	4
7. Sampaloc.....	43	39	82
Total.....	116	90	206
<b>No. III, PACO:</b>			
8. Port Area.....			
9. Intramuros.....	10	10	20
10. Ermita.....	10	8	18
11. Malate.....	21	26	47
12. Paco.....	7	8	15
13. Pandacan.....	3	3	6
14. Santa Ana.....	5	8	13
Total.....	56	63	119
Grand total.....	293	243	536

**NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED**

[Stillbirths not included]

Social conditions	Male	Female
Married.....	117	91
Divorced.....		
Widowed.....	34	41
Single.....	188	151
Conditions not stated.....	2	
Total.....	341	283
Grand total.....	624	

Stillbirths ..... 46

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Ages	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	83	71	4	3	161
1 year plus.....	24	27		3	54
2 years plus.....	5	9	1		15
3 years plus.....	3	6	1		10
4 years plus.....		3	2	1	6
5 to 9 years.....	9	3			12
10 to 14 years.....	4	4	1	2	11
15 to 19 years.....	12	5	6	7	30
20 to 24 years.....	13	16	6	4	39
25 to 29 years.....	16	12	2	3	33
30 to 34 years.....	13	11	4	5	33
35 to 39 years.....	12	12	4	6	34
40 to 44 years.....	11	9	3	1	24
45 to 49 years.....	21	6	6	1	34
50 to 54 years.....	11	9	2	1	23
55 to 59 years.....	9	7	3	1	20
60 to 64 years.....	11	6	1		18
65 to 69 years.....	12	4	1	1	18
70 to 74 years.....	7	4			11
75 to 79 years.....	2	3			5
80 to 84 years.....	6	8		1	15
85 to 89 years.....	3	5			8
90 to 94 years.....	3	2			5
95 to 99 years.....	1	1			2
100 years and over.....	2				2
Age not stated.....					
Total.....	298	243	47	40	623

NOTE.—One male Filipino, age and permanent residence unknown not included in the above table.

**NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG RESIDENTS IN THE CITY OF MANILA**

**[Stillbirths not included]**

International list number (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
5	a. Typhoid fever.....			6	7					1		1		15
10	a. Malarial fever.....			3										3
11	Diphtheria.....				1									1
16	b. Without pulmonary complications specified.....			1										1
24	Dysentery:													
28	b. Bacillary.....			4	2					1				6
29	c. Unspecified or due to other causes.....				1									1
31	Meningococcus meningitis.....			1										1
32	Rabies.....													
33	Tetanus:			2										2
35	a. Umbilical.....			2	1									3
37	b. Others.....			62	63					4				129
42	Tuberculosis of the respiratory system.....													
43-69	Tuberculosis of the meninges and central nervous system.....				3									
44	Tuberculosis of the intestines and peritoneum.....			1										1
46	Tuberculosis of the joints.....			1	1									2
47	Disseminated tuberculosis:													
49	a. Chronic or unspecified.....			2										2
52	b. Chronic or unspecified.....				1									1
	Other infectious diseases.....													
	<i>II. General diseases not included in Class I</i>													
44	Cancer and other malignant tumors of the stomach, liver.....			1	1					1				3
46	Cancer and other malignant tumors of the female genital organs.....													1
47	Cancer and other malignant tumors of the breast.....				1									1
49	Cancer and other malignant tumors of other or unspecified organs.....			2										2
52	Chronic rheumatism, osteoarthritis, gout.....			2										2









# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list number (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
	a. Typhoid fever.....			1	2					1				4
5	b. Paratyphoid fever.....				1									1
	Malaria:													
	a. Malarial fever.....			1										1
16	Dysentery:													
	a. Amebic.....			1	1									2
	b. Bacillary.....													1
31	Tuberculosis of the respiratory system.....			4	5			1		2		1		13
32	Tuberculosis of the meninges and central nervous system.....				1									1
33	Tuberculosis of the intestines and peritoneum.....			1	1									2
37	Disseminated tuberculosis:													
	a. Chronic or unspecified.....				1									1
40	b. Chronic or unspecified.....				1									1
	Gonococcus infection.....													
48-69	<i>II. General diseases not included in Class I</i>													
44	Cancer and other malignant tumors of the stomach, liver.....				1									1
57	Diabetes mellitus.....			1										1
60	Diseases of the thyroid gland:													
	a. Simple goiter.....				1									1
	b. Other diseases of the thyroid gland.....													
70-86	<i>III. Diseases of the nervous system and of the organs of special sense</i>													
70	Encephalitis.....													
71	Meningitis:		1											1
	a. Simple meningitis.....													
74	Cerebral hemorrhage, apoplexy:			1	1									2
	a. Cerebral hemorrhage.....			1										1
87-96	<i>IV. Diseases of the circulatory system</i>													
90	Other diseases of the heart.....				1									1



NUMBER OF DEATHS BY NATIONALITY, AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA—Continued

670

International list number (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
164—														
164	Senility.....				1									1
165-203														
171	<i>XIII. Old age</i>													
176	<i>XIV. External causes</i>													
183	Suicide by cutting or piercing instruments													1
186	Poisoning by venomous animals			1										1
187	Accidental traumatism by firearms (wounds of war excepted)			1										1
185	Accidental traumatism by fall			1										1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.):													
	a. Railroad accidents			1										1
189	Injuries by animals (not poisoning)			1										1
	Total.....	1	1	39	39			1		4		2		87
	Grand total.....	2		78				1		4		2		87

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF NOVEMBER, 1928 (INCLUDING TRANSIENTS)

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month										Total under 1 month					
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days							
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female				
All causes.....	87	74		12	10	13	16			13	3	1	1	4	4	43	34
<b>COMMUNICABLE DISEASES:</b>																	
Typhoid and paratyphoid fever (1).....																	
Smallpox (6).....																	
Measles (7).....																	
Whooping-cough (9).....																	
Diphtheria (10).....																	
Influenza (11).....																	
Asiatic cholera (14).....																	
Dysentery (16).....																	
Meningococcus meningitis (24).....																	
Other epidemic and endemic diseases (25).....																	
Tetanus (29).....																	
Other infectious diseases (1-42) <sup>1</sup> .....																	
Beriberi (55).....																	
Diseases of the nervous system (70; 71; 80; 85).....																	
Respiratory diseases (99; 100; 101; 107).....																	
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....																	
Congenital malformations (159).....																	
Early infancy (160; 161; 162; 163).....																	
All other causes (43-205) <sup>1</sup> .....																	

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF NOVEMBER, 1928 (INCLUDING TRANSIENTS)—Continued

[Stillbirths not included]

Causes of death	Age at death under 1 year														Total under 1 year										
	1 month +		2 months +		3 months +		4 months +		5 months +		6 months +		7 months +			8 months +		9 months +		10 months +		11 months +			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female		
All causes.....	5	10	10	9			5	3	4	1	4	3	6		2	4		4	3	3	2	2	1	4	40
COMMUNICABLE DISEASES:																									
Typhoid and paratyphoid fever (1).....																									
Smallpox (6).....																									
Measles (7).....																									
Whooping-cough (9).....																									
Diphtheria (10).....																									
Influenza (11).....																									
Asiatic cholera.....																									
Dysentery (16).....																									
Meningococcus meningitis (24).....																									
Other epidemic and endemic diseases (25).....																									
Tetanus (29).....																									
Other infectious diseases (1-42)¹.....																									
Berberi (55).....	1	7	4	3					1	1						2			1						3
Diseases of the nervous system (70; 71; 80; 85).....	1	1	1						1				1					1							5
Respiratory diseases (99; 100; 101; 107).....	1	1	3	4			4	3				2	5			2		2	1	3	2		1	1	19
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127).....	1	1	2	2			1		1	1		1				2		1				1			6
Congenital malformations (159).....																									
Early infancy (160; 161; 162; 163).....		2							1	1		1													2
All other causes (43-205)¹.....	1																				1				3

<sup>1</sup> Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.



## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

---

Number of spring traps set.....	20,323
Number of rats caught by spring traps.....	2,246
Number of cage wire traps set.....	496
Number of rats caught by cage wire traps.....	2
Number and kind of baits (coconuts).....	21,385
Number of poison portions placed.....	17,371
Number of rats found poisoned.....	135
Number of rats killed by clubs and other weapons.....	99
Number of rats found dead from other causes.....	86
Total number of rats otherwise caught, found dead or killed.....	2,568
Total number of rats sent to the laboratory for examination.....	2,568
Total number of rats found positive for plague.....	0

---

**TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF NOVEMBER, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	No. 1..... No. 2..... No. 3.....	4 1 1	3 1 1	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	4 1 .....	..... 1 .....	3 ..... .....	..... ..... .....	7 1 .....	..... 1 .....
II.....	No. 4..... No. 5..... No. 6..... No. 7.....	5 2 1 6	5 1 3 3	4 1 ..... 1	..... 2 ..... .....	..... 1 ..... .....	..... ..... ..... .....	..... ..... ..... .....	7 2 1 6	2 1 ..... .....	5 1 ..... 3	4 ..... ..... 1	12 3 1 5	6 1 ..... 1
III.....	No. 8..... No. 9..... No. 10..... No. 11..... No. 12..... No. 13..... No. 14.....	..... 1 4 7 1 ..... 2	..... 1 3 3 1 ..... 1	..... ..... 1 1 1 ..... .....	..... ..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... ..... .....	..... 1 4 7 1 ..... 2	..... ..... ..... 3 ..... ..... 1	..... 1 3 3 1 ..... .....	..... ..... ..... ..... 1 ..... .....	2 7 10 2 ..... 2	..... ..... 4 1 ..... 1
Grand total.....	34	8	20	7	2	.....	.....	.....	36	8	20	7	56	15

**REMARKS:**

Cases confirmed as Typhoid Fever..... 55  
 Cases confirmed as Paratyphoid Fever..... 1  
 By autopsy.....  
 By blood culture..... 2  
 By Widal reaction..... 3  
 By urine examination..... 23  
 By feces examination..... 0  
 By clinical symptoms..... 0  
 Cases reported among nonresident persons not included in the table..... 28  
 Deaths reported among nonresident persons not included in the table..... 23  
 Deaths reported among nonresident persons not included in the table..... 5

Typhoid carrier—None.

**CHOLERA REPORTED DURING THE MONTH OF NOVEMBER, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
I.....	No. 1.....													
	No. 2.....													
	No. 3.....													
II.....	No. 4.....													
	No. 5.....													
	No. 6.....													
III.....	No. 7.....													
	No. 8.....													
	No. 9.....													
	No. 10.....													
	No. 11.....													
	No. 12.....													
	No. 13.....													
	No. 14.....													
Grand total.....														

**REMARKS:**

No nonresident cases was reported during the month.

Cholera carrier—9.

## DIPHTHERIA REPORTED DURING THE MONTH OF NOVEMBER 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home				Total				Grand total	
	Male			Female			Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. {																
No. 1. . . . .																
No. 2. . . . .				2									2		2	
No. 3. . . . .																
II. {																
No. 4. . . . .				2	1								2	1	2	1
No. 5. . . . .	1										1				1	
No. 6. . . . .				1									1		1	
No. 7. . . . .																
III. {																
No. 8. . . . .																
No. 9. . . . .	1										1				1	
No. 10. . . . .				1									1		1	
No. 11. . . . .																
No. 12. . . . .																
No. 13. . . . .																
No. 14. . . . .																
Grand total . . . . .	2			6	1						2		6	1	8	1

## REMARKS:

Cases reported among nonresident persons not included in the table.

Deaths reported among nonresident persons not included in the table.

Diphtheria carrier—3

3

0

## DYSENTERIES REPORTED DURING THE MONTH OF NOVEMBER, 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I. ....														
{ No. 1.....	3	3	1	1			1	1	3	3	2	2	5	5
{ No. 2.....									1	1			1	
{ No. 3.....	1													
II. ....														
{ No. 4.....	1	1	1	1	1	1			1	1	1	1	2	2
{ No. 5.....	1								1				1	
{ No. 6.....														
{ No. 7.....	1	1							1	1			1	1
{ No. 8.....														
{ No. 9.....														
{ No. 10.....														
{ No. 11.....					1				1				1	
{ No. 12.....														
{ No. 13.....			2								2		2	
{ No. 14.....														
Grand total.....	7	5	4	2	1	1	1	1	8	5	5	3	13	8

## REMARKS:

Amebic dysentery..... 0

Bacillary dysentery..... 11

Unspecified..... 2

Cases reported among nonresident persons not included in the table..... 9

Deaths reported among nonresident persons not included in the table..... 3

Dysentery carrier—None.

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF NOVEMBER, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	31	13	3	
Varicella.....	6	5		
Varioloid.....				
Smallpox.....				
Measles.....	1	1		
Whooping cough.....				
Influenza.....	6	5	1	
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....		1		1
Tuberculosis of the respiratory system.....	147	174	66	63
Tuberculosis of other organs.....	4	4	4	4
Beriberi, infantile.....	8	15	8	15
Beriberi, adults.....	1	3	1	3

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	27	6	1	
Varicella.....	8	13		
Varioloid.....				
Smallpox.....				
Measles.....				
Whooping cough.....				
Influenza.....	1			
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	29	17	8	5
Tuberculosis of other organs.....	1	3	1	3
Beriberi, infantile.....				
Beriberi, adults.....				

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINES  
FOR THE MONTH OF NOVEMBER, 1928**

Sera and vaccines	On hand November 1, 1928	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of the month
Antidiphtheric serum (tubes).....	202		202	22	180
Antidysenteric serum (ampoules).....	162	100	262	174	88
Antitetanic serum (units).....	895,000		895,000	895,000	
Cholera vaccine (c.c.).....	7,000	30,000	37,000	37,000	
Dried vaccine virus (units).....	4,200	100,000	104,200	98,200	6,000
Dysenteric vaccine (c.c.).....	2,400	30,000	32,400	32,400	
Fresh vaccine virus (units).....	29,800	200,000	229,800	172,900	56,900
Gonococcus vaccine (ampoules).....		25	25	25	
Mixed typhoid-cholera vaccine (c.c.).....	4,900	90,000	94,900	94,720	180
Normal horse serum (ampoules).....		50	50	50	
Typhoid vaccine (c.c.).....	5,820	18,000	23,820	23,500	320

REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF NOVEMBER, 1928

679

Health district	Municipal districts	Vaccinations			Inspection of persons vaccinated							
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over		Total	
			Never	Successfuly	Unsuccessfuly	Positive	Negative	Positive	Negative	Positive		Negative
No. 1.	Tondo.....	415	355	48	12	314	10	15	2	1	330	12
	San Nicolas.....	485	95	384	6	152	2	15	1	3	170	5
	Binondo.....	85	79	3	3	47	5	3			50	6
	Santa Cruz.....	1,067	321	706	40	207	6	28	3	338	55	64
	Quisapo.....	39	35	0	4	18	1	1	2		19	3
No. 2.	San Miguel.....	48	44	0	4	39		7		1	47	7
	Sampaloc.....	237	204	25	8	271	6	10	1		281	
	Port Area.....	1			1	2	1				2	1
	Intramuros.....	96	81	10	5	57	26	1			58	26
	Ermita.....	60	37	9	14	42	1	3		4	49	1
No. 3.	Malate.....	107	95		12	157	3	17			174	5
	Paco.....	1-8	92	14	22	133	4	6		1	140	4
	Pandacan.....	22	18		4	48	4	1			49	4
	Santa Ana.....	27	25		2	18	1	1			19	1
	Total.....	2,817	1,481	1,199	137	1,505	70	108	9	348	60	1,961

Vaccine virus:		6,735 units
Remainder from last month.	do	2,915 units
Received during the month.	do	3,820 do
Used during the month.		
Remainder for the next month.		
Total.		6,735 units 6,735 units

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA  
DURING THE MONTH OF NOVEMBER, 1928<sup>1</sup>**

Health districts	Municipal districts	First injection		Second injection		Total	
		V.	R.	V.	R.	V.	R.
No. 1.....	Tondo.....	279		1,102		1,381	
	San Nicolas.....	2				2	
	Binondo.....	5				5	
No. 2.....	Santa Cruz.....	2,412		2,316		4,728	
	Quiapo.....						
	San Miguel.....	822		546		1,368	
	Sampaloc.....						
No. 3.....	Port Area.....						
	Intramuros.....						
	Ermita.....	6		173		179	
	Malate.....	11		79		90	
	Paco.....	3				3	
	Pandacan.....						
	Santa Ana.....						
Total.....		3,540		4,216		7,756	

<sup>1</sup> V., in persons never vaccinated before; R., revaccinations.

**ANTITYPHOID AND ANTICHOLERA VACCINATIONS PERFORMED IN THE  
CITY OF MANILA DURING THE MONTH OF NOVEMBER, 1928<sup>1</sup>**

Health districts	Municipal districts	First injection		Second injection		Third injection		Total	
		V.	R.	V.	R.	V.	R.	V.	R.
No. 1.....	Tondo.....	181	2,857	135	2,718	132	2,416	448	7,991
	San Nicolas.....	26	783	15	792	6	695	47	2,270
	Binondo.....		654		540		380		1,574
No. 2.....	Santa Cruz.....	174	2,643	144	3,181	118	1,819	436	7,643
	Quiapo.....	107	536	80	357	52	227	239	1,120
	San Miguel.....								
	Sampaloc.....	101	3,681	75	3,441	65	2,318	241	9,440
No. 3.....	Port Area.....								
	Intramuros.....	76	536	37	429	25	420	138	1,385
	Ermita.....	8	1,249	7	1,057		1,031	15	3,337
	Malate.....	27	1,318	20	1,212	12	1,173	59	3,703
	Paco.....	66	923	41	614	32	501	139	2,038
	Pandacan.....								
	Santa Ana.....								
Total.....		766	15,180	554	14,341	442	10,980	1,762	40,501

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections. Typhoid and paratyphoid vaccine are used for the third injection.

V., in persons never vaccinated before; R., revaccinations.



**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Total vaccina- tions	Vaccinations		
		Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	13,198	2,129	3,780	7,289
Agusan.....	8,654	2,734	1,859	4,061
Albay.....	43,538	10,006	12,430	21,102
Antique.....	21,818	6,655	9,274	5,889
Bataan.....	12,149	4,972	2,110	5,027
Batanes.....	2,667	251	1,245	1,171
Batangas.....	59,753	16,740	16,872	26,141
Bohol.....	64,698	17,939	20,500	26,259
Bukidnon.....	9,259	3,342	1,695	4,222
Bulacan.....	45,083	14,324	17,448	13,311
Cagayan.....	103,085	17,750	70,004	15,331
Camarines Norte.....	8,452	2,593	2,353	3,506
Camarines Sur.....	24,499	6,148	5,476	12,875
Capiz.....	46,397	12,358	18,174	15,865
Catanduanes.....	30,076	3,791	11,131	15,154
Cavite.....	129,651	8,533	108,694	12,024
Cebu.....	144,778	37,175	28,355	79,248
City of Baguio.....	53	8	27	18
Cotabato.....	29,996	10,811	9,092	10,093
Davao.....	35,720	13,463	12,384	9,873
Ilocos Norte.....	138,872	8,256	105,400	25,216
Ilocos Sur.....	34,241	8,933	7,242	18,066
Iloilo.....	145,622	43,546	73,447	28,629
Isabela.....	20,051	4,435	4,172	11,444
Laguna.....	131,577	12,124	101,657	17,796
Lanao.....	16,723	5,181	7,488	4,054
La Union.....	27,725	5,640	410	21,675
Leyte.....	152,993	47,887	50,576	54,530
Marinduque.....	11,783	2,104	6,507	3,172
Masbate.....	49,082	6,220	30,631	12,231
Mindoro.....	9,059	2,183	1,871	5,005
Misamis.....	34,241	12,128	2,613	19,500
Mountain Province.....	45,252	16,080	14,808	14,364
Nueva Ecija.....	86,115	17,625	42,430	26,060
Nueva Vizcaya.....	6,434	1,563	886	3,985
Occidental Negros.....	111,682	35,780	47,581	28,321
Oriental Negros.....	46,118	15,842	11,709	18,567
Palawan.....	4,573	941	1,597	2,085
Pampanga.....	29,365	12,276	1,647	15,442
Pangasinan.....	96,028	25,705	23,681	46,642
Rizal.....	37,190	8,917	20,364	7,909
Romblon.....	11,222	2,583	3,590	5,049
Samar.....	63,781	13,724	17,972	32,085
Sorsogon.....	71,611	13,666	30,452	27,493
Sulu.....	27,199	11,134	6,839	9,226
Surigao.....	11,372	3,343	2,308	5,721
Tarlac.....	32,009	7,218	13,839	5,952
Tayabas.....	38,679	14,412	6,232	18,035
Zambales.....	7,892	2,340	1,048	4,504
Zamboanga.....	19,104	7,449	2,031	9,624
Total.....	2,351,119	561,857	998,971	790,791

<sup>1</sup> Incomplete; reports from other provinces not yet received.  
Vaccinations performed by Vaccinating Parties are included in the above table.

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	1,149	541	2,239	1,490	2,321	3,903	5,709	5,934
Agusan.....	481	303	758	855	1,145	888	2,384	2,046
Albay.....	5,022	2,119	5,044	1,810	6,571	5,328	16,637	9,257
Antique.....	2,244	599	3,027	1,326	2,678	2,895	7,949	4,820
Bataan.....	2,823	493	3,325	1,286	1,542	811	7,690	2,590
Batanes.....	220	118	369	242	898	590	1,487	950
Batangas.....	8,183	1,952	11,270	5,057	11,644	10,651	31,097	17,660
Bohol.....	6,381	2,629	9,663	4,728	17,331	15,078	33,375	22,435
Bukidnon.....	293	156	769	584	2,176	2,497	3,238	3,237
Bulacan.....	9,132	1,944	8,561	3,552	8,887	6,645	26,580	12,141
Cagayan.....	6,181	1,489	9,305	3,080	27,296	30,267	42,782	34,836
Camarines Norte.....	1,435	395	2,703	739	1,394	744	5,532	1,878
Camarines Sur.....	3,046	1,469	4,417	2,009	6,584	3,933	14,047	7,411
Capiz.....	3,996	992	5,403	2,140	14,401	7,826	23,800	10,958
Catanduanes.....	2,456	1,190	3,502	1,500	5,899	5,051	11,857	7,741
Cavite.....	5,913	2,367	8,874	5,856	38,335	40,784	53,122	49,007
Cebu.....	13,066	5,837	13,845	6,860	20,100	24,717	47,011	37,414
City of Baguio.....	0	0	0	0	36	17	36	17
Cotabato.....	1,034	522	2,461	1,250	6,814	4,329	10,309	6,101
Davao.....	1,222	434	3,032	1,358	10,024	6,746	14,278	8,538
Ilocos Norte.....	5,325	2,016	14,720	6,732	44,949	44,117	64,994	52,865
Ilocos Sur.....	3,852	1,579	6,560	2,825	7,044	5,849	17,456	10,253
Iloilo.....	9,333	2,364	18,062	5,996	37,386	35,134	64,781	43,494
Isabela.....	2,528	816	3,397	1,133	5,093	2,670	11,018	4,619
Laguna.....	4,901	3,632	7,315	5,191	28,424	39,900	40,640	48,723
Lanao.....	780	424	1,222	994	2,298	2,858	4,300	4,276
La Union.....	3,551	1,506	5,113	4,378	3,621	5,498	12,285	11,382
Leyte.....	6,899	2,016	20,620	5,093	39,774	25,052	67,293	32,161
Marinduque.....	946	318	635	222	2,390	3,062	3,971	3,602
Masbate.....	1,565	307	4,513	1,116	16,342	8,182	22,420	9,605
Mindoro.....	855	282	1,134	600	2,223	1,641	4,212	2,523
Misamis.....	2,671	1,000	3,968	1,699	6,238	3,934	12,877	6,633
Mountain Province.....	686	236	2,425	1,343	8,759	6,834	11,870	8,413
Nueva Ecija.....	7,493	2,529	13,096	4,913	21,535	15,158	42,124	22,600
Nueva Vizcaya.....	795	411	598	673	1,227	2,171	2,620	3,255
Occidental Negros.....	7,817	1,807	13,624	4,260	24,461	20,817	45,902	26,884
Oriental Negros.....	7,080	1,973	7,926	3,339	10,351	6,502	25,357	11,814
Palawan.....	58	61	216	177	1,171	1,416	1,445	1,654
Pampanga.....	4,745	2,276	3,463	1,817	909	1,076	9,117	5,169
Pangasinan.....	14,368	3,398	16,236	4,947	21,035	18,763	51,639	27,108
Rizal.....	4,577	2,011	2,250	1,935	6,111	8,235	12,938	12,181
Romblon.....	1,361	540	1,966	646	3,055	2,000	6,342	3,186
Samar.....	2,432	1,260	4,634	3,164	10,587	8,686	17,653	13,110
Sorsogon.....	3,337	1,141	7,577	2,224	24,507	11,439	35,421	14,804
Sulu.....	1,129	529	3,932	2,116	4,130	4,877	9,191	7,522
Surigao.....	718	254	1,332	665	3,344	2,557	5,394	3,476
Tarlac.....	2,684	1,129	4,862	2,701	5,470	8,289	13,016	12,119
Tayabas.....	5,840	3,055	7,762	3,305	9,308	7,324	22,910	13,684
Zambales.....	719	587	865	1,290	1,196	1,701	2,780	3,578
Zamboanga.....	1,064	682	2,525	1,695	3,600	3,267	7,189	5,644
Total.....	184,386	65,688	281,115	122,911	542,614	482,709	1,008,115	671,308

<sup>1</sup>Incomplete; reports from other provinces not yet received.  
Vaccinations performed by Vaccinating Parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Abra.....	6,221	5,363		11,584
Agusan.....	4,405	2,173		6,578
Albay.....	7,108	4,795		11,903
Bataan.....	44			44
Batanes.....	37	19		56
Batangas.....	14	11		25
Bohol.....	1,703	1,056		2,759
Bukidnon.....	1,866	875		2,741
Bulacan.....	2,896	1,358		4,254
Cagayan.....	11,463	7,617		19,080
Camarines Norte.....	1,657	1,430		3,087
Camarines Sur.....	7,119	2,828		9,947
Capiz.....	32,717	23,412	909	57,038
Catanduanes.....	5,826	3,649		9,475
Cebu.....	13,084	7,905		20,989
Iloilo.....	56,019	33,440		89,459
Isabela.....	4,217	2,345		6,562
Ilocos Norte.....	6,954	5,898		12,852
Laguna.....	12,569	8,711	62	21,342
La Union.....	31,181	26,562		57,743
Masbate.....	884	212		1,096
Mindoro.....	3,006	2,114		5,120
Misamis.....	979	430		1,409
Mountain Province.....	5,774	2,797	31	8,602
Nueva Vizcaya.....	52	25		77
Occidental Negros.....	7,484	4,284		11,768
Oriental Negros.....	679	308		987
Palawan.....	91	81		172
Pampanga.....	3,727	1,152		4,879
Pangasinan.....	30,123	24,052		54,175
Rizal.....	9,838	3,170	3	13,011
Romblon.....	5,972	4,652		10,624
Samar.....	1,387	1,166		2,552
Sorsogon.....	222	121		343
Surigao.....	162	127		289
Tarlac.....	5,772	2,275		8,047
Tayabas.....	5,458	3,128		8,586
Zambales.....	37,039	30,953		67,992
Zamboanga.....	248	170		418
Total.....	325,497	220,663	1,005	547,165

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Agusan.....	354	118		472
Albay.....	18,976	7,666	274	26,916
Antique.....	2,119	1,233		3,352
Bataan.....	14,403	1,189		15,592
Batanes.....	21	19		40
Batangas.....	2,183	542		2,725
Bulacan.....	157,893	1,036		158,929
Cagayan.....	6,054	514		6,568
Camarines Sur.....	24,637	524		25,161
Capiz.....	298	226		524
Catanduanes.....	542	306		848
Cebu.....	394	338	50	782
Iloilo.....	222	85		307
Isabela.....	240	322		562
Ilocos Norte.....	2,562	2,010	40	4,612
Laguna.....	2,306	819	37	3,162
Leyte.....	3,165	1,356		4,521
Mindoro.....	2,996	1,872		4,868
Nueva Ecija.....	235	99		334
Oriental Negros.....	166	62		228
Pampanga.....	1,665			1,665
Pangasinan.....	5,597	4,194		9,791
Rizal.....	146,642	17,205	69	163,886
Romblon.....	1,199	209		1,408
Samar.....	2,818	1,295	329	4,442
Sorsogon.....	16,341	1,006	2	17,349
Tarlac.....	2,009	763		2,772
Total.....	416,057	45,008	801	461,866

<sup>1</sup> Incomplete ; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Albay.....	357	233	107	697
Bataan.....	51	51	51	153
Batangas.....	232	182		414
Bukidnon.....	157	92	31	270
Bulacan.....	6,652	3,933	2,372	12,957
Camarines Sur.....	4,557	2,275	77	6,909
Iloilo.....		120		120
Laguna.....	7,480	4,867	2,204	14,551
La Union.....	343	293	539	1,175
Mindoro.....	340	30		370
Mountain Province.....	82			82
Pampanga.....	32	32	26	90
Pangasinan.....	2,237	1,252	79	3,568
Rizal.....	3,675	1,434	303	5,412
Romblon.....	319	306		625
Sorsogon.....	429	112	9	550
Tarlac.....	5,213	1,617	213	7,043
Total.....	32,156	16,819	6,011	54,986

<sup>1</sup> Incomplete ; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Abra.....	5,768	4,893	659	11,320
Agusan.....	3,768	2,215		5,983
Albay.....	289	54		343
Antique.....	3,277	1,813		5,090
Bataan.....	14,664	9,902		24,566
Batanes.....	754	706		1,460
Batangas.....	3,454	2,451	27	5,932
Bohol.....	4,382	3,277		7,659
Bukidnon.....	627	585	49	1,261
Bulacan.....	488	264		752
Camagayan.....	11,161	6,231		17,392
Camarines Norte.....	9,772	7,914		17,686
Camarines Sur.....	4,181	1,710		5,891
Capiz.....	5,018	2,548	124	7,690
Cavite.....	90,709	77,020		167,729
Cebu.....	29,630	10,123	495	40,248
City of Baguio.....	12	12		24
Cotabato.....	2,131			2,131
Davao.....	3,490	1,906		5,396
Ilocos Norte.....	8,165	4,230	981	13,376
Ilocos Sur.....	4,900	3,573	46	8,519
Iloilo.....	25,072	7,340		32,412
Isabela.....	6,338	4,795		11,133
Laguna.....	10,467	8,794	5,808	25,069
Lanao.....	13,836	6,052		19,888
La Union.....	11,229	7,774		19,003
Leyte.....	8,149	4,016		12,165
Marinduque.....	6,655	3,519		10,174
Masbate.....	3,930	1,667		5,597
Mindoro.....	2,828	1,229		4,057
Misamis.....	6,296	1,918	66	8,280
Mountain Province.....	3,561	1,124	682	5,367
Nueva Ecija.....	10,218	4,241		14,459
Nueva Vizcaya.....	2,368	2,024		4,392
Occidental Negros.....	13,990	6,835	124	20,953
Oriental Negros.....	7,932	3,613	3	11,548
Palawan.....	59	59		118
Pampanga.....	178,186	20,225		198,411
Pangasinan.....	16,466	11,785	92	28,343
Rizal.....	3,590	1,960		5,550
Samar.....	8,576	4,581	259	13,416
Sulu.....	30			30
Surigao.....	313	216		529
Tarlac.....	5,173	3,405	111	8,689
Tayabas.....	25,127	12,916		38,043
Zambales.....	9,812	6,331		16,143
Zamboanga.....	11,974	3,400		15,378
<b>Total.....</b>	<b>598,819</b>	<b>275,246</b>	<b>9,530</b>	<b>883,595</b>

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF NOVEMBER, 1928**

No case and no death reported during the month.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF NOVEMBER, 1928**

No case and no death reported during the month.

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF NOVEMBER, 1928**

Sanitary orders	Health districts			
	No. 1	No. 2	No. 3	Total
	Meisic	Sampaloc	Paco	
<b>Orders pending, November 1, 1928:</b>				
Minor.....	126	104	270	500
Sewer.....	26	49	4	79
Vacating.....	7	8	.....	15
Filling.....	24	46	29	99
<b>Total.....</b>	<b>183</b>	<b>207</b>	<b>303</b>	<b>693</b>
<b>Orders issued during the month:</b>				
Minor.....	7	12	6	25
Sewer.....	.....	.....	1	1
Vacating.....	.....	.....	.....	.....
Filling.....	1	.....	.....	1
<b>Total.....</b>	<b>8</b>	<b>12</b>	<b>7</b>	<b>27</b>
<b>Orders completed during the month:</b>				
Minor.....	8	8	14	30
Sewer.....	1	.....	1	2
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	<b>9</b>	<b>8</b>	<b>15</b>	<b>32</b>
<b>Orders cancelled during the month:</b>				
Minor.....	.....	.....	1	1
Sewer.....	.....	.....	.....	.....
Vacating.....	.....	.....	.....	.....
Filling.....	.....	.....	.....	.....
<b>Total.....</b>	.....	.....	<b>1</b>	<b>1</b>
<b>Orders pending, November 30, 1928:</b>				
Minor.....	125	108	261	494
Sewer.....	25	49	4	78
Vacating.....	7	8	.....	15
Filling.....	25	46	29	100
<b>Total.....</b>	<b>182</b>	<b>211</b>	<b>294</b>	<b>687</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alterations.....	32	49	39	120
<b>Permits for minor building constructions:</b>				
Approved.....	30	56	28	114
Disapproved.....	14	7	1	22
<b>New buildings completed.....</b>	<b>15</b>	<b>29</b>	<b>18</b>	<b>62</b>
<b>Permits for light and mixed material constructions:</b>				
Approved.....	19	44	9	72
Disapproved.....	23	10	2	35
<b>Prosecutions:</b>				
Convictions.....	.....	.....	.....	.....
Dismissals.....	2	1	6	9
Amount of fines.....	.....	.....	.....	.....
<b>Plumbing permits issued.....</b>	<b>38</b>	<b>43</b>	<b>40</b>	<b>121</b>
<b>Plumbing projects completed.....</b>	<b>58</b>	<b>46</b>	<b>46</b>	<b>150</b>
<b>Premises connected to the sanitary sewer to October 31, 1928</b>	<b>2,576</b>	<b>4,422</b>	<b>813</b>	<b>7,811</b>
<b>Connected during the month.....</b>	<b>8</b>	<b>2</b>	<b>7</b>	<b>17</b>
<b>Total.....</b>	<b>2,584</b>	<b>4,424</b>	<b>820</b>	<b>7,828</b>

NOTE.—Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS  
DEPARTMENT OF PUBLIC INSTRUCTION

MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

DECEMBER, 1928

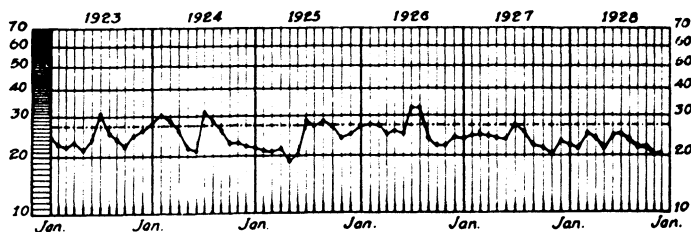
No. 12

ENTERED AT THE MANILA POST OFFICE AS SECOND-CLASS MATTER

Germs, says the United States Public Health Service, are usually a hand-to-mouth affair. Better wash up.



*ANNUAL DEATH RATES BY MONTH CITY of MANILA*



-----Average death rate for the last five years.

MANILA  
BUREAU OF PRINTING  
1929

# PHILIPPINE HEALTH SERVICE

## COMMITTEE ON PUBLICATIONS

JOSE P. BANTUG, M. D., *Chairman*  
 LEONCIO LOPEZ-RIZAL, M.D., *Member*  
 EUSEBIO D. AGUILAR, M.D., *Member*  
 TEOFILO CORPUS, M.D., *Member*  
 REGINO G. PADUA, M.D., *Member and Secretary*

## TABLE OF CONTENTS

	Page
First Progress Report Ending December 31, 1928, in the Cebu Leper Detention Camp, P. H. S., by Dr. Froilan Eubanas.....	689
Proclamation No. 198 of the Governor-General.....	701
Leprosy Campaign in the Philippines—The Cebu Experiment, by Jose Rodriguez .....	702
Preliminary Report of the Value of Investigating Diarrheal Diseases for Possible Cases of Cholera and the Necessity of Instituting Prompt Measures, by Dr. Teofilo Corpus .....	704
Fajardo Describes Culion Lepers' Life.....	707
Common Colds .....	708
Influenza .....	709
Miscellaneous .....	710
General Statistics .....	713



MONTHLY BULLETIN  
OF THE  
PHILIPPINE HEALTH SERVICE

VOL. VIII

DECEMBER, 1928

No. 12

**FIRST PROGRESS REPORT ENDING DECEMBER 31, 1928,  
IN THE CEBU LEPER DETENTION CAMP, P. H. S.**

By FROILAN EUBANAS, M.D.

*Physician in Charge, Cebu Leper Detention Camp*

Since 1923 there has been no progress report made of patients confined in the camp. The patients were treated but there was no systematic examination made on the degree of improvement obtained per semester.

In the present report I am only going to discuss the progress of treatment of three hundred thirty-six (336) patients confined in the camp up to the end of December making no reference to those sent to Culion, those who died or escaped.

Of those three hundred thirty-six (336) patients remaining in segregation to the end of the year, there were two hundred twenty-eight (228) males and one hundred eight (108) females. As to hospitalization, the following table will illustrate:

TABLE No. I.—*Patients hospitalized in the Cebu Leper Detention Camp up to December 31, 1928*

	Males	Females	Total
1. Voluntarily presented.....	184	90	274
2. Reported.....	3	2	5
3. Arrested.....	41	16	57
Total.....	228	108	336

Percentage:

1. Presented (both sexes) .....	82.00
2. Arrested (both sexes) .....	17.00
3. Reported (both sexes) .....	1.00

*Comment.*—It can be seen that of these patients remaining in segregation 82 per cent had voluntarily presented, 17 per cent arrested, and 5 per cent reported.

According to sex and age group, Table No. II illustrates:

TABLE No. II.—*Showing sex and age groups*

Age	Male	Per cent	Female	Per cent	Total	Per cent
From 1-10 years.....	17	7.4	7	6.4	24	7.13
Over 10-20 years.....	68	29.8	49	45.3	117	34.82
Over 20-30 years.....	65	28.5	22	2.0	87	25.89
Over 30-40 years.....	49	21.5	12	11.1	61	18.12
Over 40-50 years.....	11	4.8	9	8.3	20	6.88
Over 50 years.....	18	7.8	9	8.3	27	7.16
Total.....	228	64.88	108	35.12	336	100.0

*Comment.*—There were 24 patients to 10 years of age (7.13 %); 117 from 10 to 20 years (34.82%); 87 from 20 to 30 years (25.89%). It is seen that patients from 10 to 30 years constitute 60.71 per cent of all patients in segregation.

#### FAMILY HISTORY

Table No. III is given in order to give an idea as to occurrence of leprosy in the family.

TABLE No. III.—*History of leprosy in the family*

	Male	Female	Total	Per cent
I. Negative.....	126	62	188	56
1. Denies any contact with any known or suspected lepers.....	106	56	162	48.5
2. Had contact with friends or other acquaintances who were lepers.....	20	6	26	7.5
II. Positive.....	102	46	148	44.0
1. Father.....	3	6	9	
2. Mother.....	4	3	7	
3. Both.....	0	0	0	
4. Brother.....	18	8	26	
5. Sister.....	11	0	11	
6. Both.....	0	0	0	
7. Brother-father.....	0	0	0	
8. Sister-father.....	0	0	0	
9. Brother-mother.....	0	0	0	
10. Sister-mother.....	0	0	0	
11. Husband.....	0	0	0	
12. Wife.....	0	0	0	
13. Sons.....	2	4	6	
14. Daughters.....	2	3	5	
15. Uncles.....	10	5	15	
16. Aunts.....	0	1	1	
17. Both.....	0	0	0	
18. Cousins (first degree).....	50	14	64	
19. Grand parents.....	2	2	4	
Total.....	228	108	336	100.0

*Comment.*—One hundred eighty-eight (188) patients or 56 per cent were negative for leprosy in the family; 148 patients

(44%) have positive family history. Of the 188 patients with negative family history, 162 or 48.5 per cent deny any contact with any known or suspected lepers, while 26 or 7.5 per cent recalled having had contact with friends or other acquaintances who were lepers at the time of contact.

The relationship among those positive cases is given in the preceding table. It will be seen from this table the preponderance of history of leprosy among first degree cousins. There were only twenty-six (26) cases and eleven cases for brothers and sisters respectively and none among husband and wife.

None was recorded in which both father and mother were lepers, neither in which father-brother or mother-brother were lepers.

There were only four cases in whom grandparents were or had been lepers.

#### DURATION AND TYPE OF LEPROSY ON ADMISSION

Table No. IV which will be shown in next page gives the relationship between the type and duration of leprosy on admission.

TABLE No. IV.—*Showing type and duration of leprosy on admission*

	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	Over 5 years	Total	Per cent
Male:								
1. Macular.....	36	9	2	1	0	2	60	70.0
2. Nodular.....	60	28	5	3	6	10	112	67.2
3. Mixed.....	24	17	5	6	6	5	68	80.3
4. Neural.....	0	0	1	0	0	2	3	75.0
Total.....	120	54	13	10	12	19	228	67.8
Female:								
1. Macular.....	13	6	0	2	0	0	21	80.0
2. Nodular.....	46	13	7	1	1	3	71	32.8
3. Mixed.....	4	3	2	0	2	4	15	19.2
4. Neural.....	0	1	0	0	0	0	1	25.0
Total.....	63	23	9	3	3	7	108	32.2
Grand total.....	183	77	22	13	15	26	336	
Per cent.....	54.4%	22.9%	6.5%	3.9%	4.4%	7.6%	100%	

Total all types:

	Cases	Per cent
1. Macular.....	71	21.1
2. Nodular.....	183	54.4
3. Mixed.....	78	23.2
4. Neural.....	4	1.2
Total.....	336	100.0

*Comment.*—This table shows strikingly that the majority of the patients were in the early stages of the disease. One hundred eighty-three (183) or 54.4 per cent have the disease to one year duration; seventy-seven (77) or 22.9 per cent have the disease from one to two years; and seventy-six (76) or 22.7 per cent have the disease from two to five years.

For both sexes the nodular type predominated having a total of one hundred eighty-three (183) or 54.4 per cent; macular, seventy-one (71) cases or 21.1 per cent; mixed, seventy-eight (78) or 23.2 per cent; and only four (4) neurals or 1.2 per cent.

### RESULT OF TREATMENT

Before discussing the result of treatment it is necessary to consider the relationship between the type of leprosy to the improvement as given in Table No. V.

TABLE No. V.—*Showing relationship of type of leprosy to improvement*

Result	Macular	Nodular	Mixed	Neural	Total	Per cent
1. Negative.....	16	22	14	2	54	16.0
2. Improved markedly.....	13	55	24	1	93	
3. Improved moderately.....	10	32	9	0	51	
4. Improved slightly.....	11	19	17	0	47	
5. Stationary.....	19	44	10	1	74	22.0
6. Worse.....	2	11	4	0	17	5.0
Total.....	71	183	78	4	336	100.0

*Comment.*—Among the 54 negative remaining at the end of the year, twenty-two (22) belonged to the nodular type, sixteen (16) macular, 14 mixed, and two (2) neural.

The remaining negatives fifty-four (54) constitute 16% of the total patients in segregation to the end of the year. The 31 paroled, and 2 negatives who died were not included above. Adding these paroled and died there would have been 87 negatives at the end of the year or 26 per cent of those remaining in segregation.

There were 191 patients showing improvement or 57 per cent of whom 93 patients had markedly improved; 51, moderately improved; and 47, slightly improved.

The stationary cases totalled 74 or 22 per cent and this rather high figure was due to the fact that those less than 6 months treatment had also been included as will be seen in the succeeding tables.

There were 17 patients (5%) worse. Some had reactions at the time of the examination.

Referring to this table again it will be seen that of the 71 macular cases 16 (22%) had become negative, 34 (48%) had shown improvement. In the nodular type, only 22 (12%) out of 183 became negative, and in the mixed type, 14 (18%) became negative out of 78 cases. Of the neural out of 4, 2 were negative (50%).

These figures show that as far as the cutaneous type of leprosy is concerned, the macular respondent best to the treatment. On the other hand, although the neural had 50 per cent negative, these cases had only become positive before in the septum. It is of common knowledge that the bacilli are found in the nerves and therefore the chance of spreading the bacilli in neural cases is at minimum as long as the septa are examined regularly from time to time, as these places have shown to be the last stronghold of the *M. Lepræ*.

#### RELATION OF TYPE AND DURATION OF LEPROSY TO IMPROVEMENT

The following table shows graphically the relation of type and duration of leprosy to improvement:

TABLE NO. VI.—*Relation of type and duration of leprosy to improvement*

Type and duration	Negative	Improved			Stationary	Worse	Total
		Marked-ly	moderately	Slightly			
Macular:							
To—							
1 year.....	15	6	6	10	11	2	50
1-2 years.....	1	6	3	0	7	0	17
2-3 years.....	0	0	0	1	1	0	2
Over 3 years.....	0	1	1	0	0	0	2
Nodular:							
To—							
1 year.....	13	37	16	12	19	6	108
1-2 years.....	7	7	10	4	10	2	40
2-3 years.....	2	7	1	0	3	1	14
Over 3 years.....	0	4	5	3	12	2	26
Mixed:							
To—							
1 year.....	4	10	2	9	1	2	28
1-2 years.....	3	7	3	5	4	1	23
2-3 years.....	2	2	1	0	0	0	5
Over 3 years.....	5	5	3	3	5	1	22
Neural:							
To—							
1 year.....	0	0	0	0	0	0	0
1-2 years.....	1	1	0	0	0	0	2
2-3 years.....	0	0	0	0	0	0	0
Over 3 years.....	1	0	0	0	0	1	2
Total.....	54	93	51	47	74	17	386

*Comment.*—Fully 50 (70%) of the macular cases are to 1 year duration; 17 cases from 1 to 2 years; 2 cases, from 2 to 3 years and 2 cases over 3 years. Of the 50 cases under 1 year, 15 or 30 per cent have become negative; 22 (44%) showing improvement; 11 (22%) stationary; and 2 (4%) worse.

Similarly in the nodular type under or to 1 year duration, 13 (12.6%) have become negative; 65 (53.4%) improved; 19 (18.4%) stationary and 6 (5.8%) worse.

In the mixed type of 1 year duration, 4 out of 28 cases (14%) have become negative; 21 (75%) improved; 1 (3.6%) stationary; and 8 (7.2%) worse.

Comparing, therefore, the 3 types mentioned with the same 1 year duration, it can be seen that the macular type showed the highest percentage of negative, i. e. 30 per cent as compared with 12.6 per cent and 14 per cent of the nodular and the mixed types respectively.

#### RELATION BETWEEN THE DURATION OF TREATMENT TO IMPROVEMENT

It is a common experience among leprosy workers that time factor is an important element in the successful treatment of leprosy. This has not only been shown in other leper stations but also in this station as will be seen in the following table:

TABLE NO. VII.—*Relation between Duration of Treatment to Improvement*

Duration	Negative	Improved			Stationary	Worse	Total
		Markedly	Moderately	Slightly			
Under 6 months.....	5	2	4	11	67	3	92
6-12 months.....	6	19	12	17	2	1	57
12-18 months.....	7	23	11	6	1	3	51
18-24 months.....	7	17	7	8	3	3	45
24-30 months.....	13	15	3	2	0	2	35
30-36 months.....	10	11	7	1	1	2	32
36-42 months.....	5	6	5	2	0	3	21
42-48 months.....	1	0	1	0	0	0	2
Over 48 months.....	0	0	1	0	0	0	1
Total.....	54	93	51	47	74	17	336

Expressed in percentage: Of total cases:

Under 6 months .....	27.4
6-12 months .....	16.6
12-18 months .....	15.1
18-24 months .....	13.4
24-30 months .....	10.4
30-36 months .....	9.5
36-42 months .....	6.2
42-48 months .....	0.6
Over 48 months .....	0.3

*Comment.*—At first glance it can be seen that few patients have been receiving treatment over 3 years for the reason that those patients who do not show improvement in leprosy after 3 years are transferred to Culion. There was only one patient who received treatment over 48 months but he showed moderate improvement; 2 patients treated from 42 to 48 months, one of whom was negative and the other moderately improved.

A great number of patients were receiving treatment to six months due to the fact that the recent admissions treated less than six months have also been included in this report.

Ninety-two (92) patients (27.4%) were receiving treatment under six months; 57 (16.6%), from 6 to 12 months; 51 (51.1%), from 12 to 18 months; 45 (13.4%), from 18 to 24 months; 35 (10.4%), from 24 to 30 months; 32 (9.5%), from 30 to 36 months; 21 (6.2%), from 36 to 42 months; and 3 cases (0.9%), from 42 to over 48 months.

The great number of negatives is found among those who had received treatment from 24 to 30 months, from which out of 35 patients, 13 (37%) have become negative. From those receiving the treatment from 30 to 36 months, out of 32 patients, 10 (33%) have become negative; from 21 patients receiving treatment from 36 to 42 months, 5 (24%) have become negative, while a smaller percentage of negative is found from among those receiving treatment in less than 12 months.

#### RELATION BETWEEN DRUGS USED TO IMPROVEMENT

The question of which drug gave the best results as far as improvement is concerned need not be discussed extensively as this has already been exhaustively considered in the various reports from the great leper settlement, Culion Leper Colony and at the San Lazaro Hospital.

The following table does not purport to give the exact value of the different antileprosy drugs used in this camp. This could not be shown in the following table for the reason that:

1. The previous treatment of the patients before the undersigned took charge of the work was not carefully recorded, or if recorded at all no previous progress report had ever been made, and

2. The treatment given before has been a combination of two, three or more drugs changes taking place every week or month.

TABLE No. VIII.—*Relation between Drugs Used to Improvement*

Drugs	Group	Negative	Improved			Stationary	Worse
			Markedly	Moderately	Slightly		
W. O. I. ....	263	43	62	39	42	66	11
W. O. ....	45	10	22	6	1	1	5
Mercado ....	5	0	2	0	2	1	0
Mixed drugs ....	17	1	7	6	2	1	0
No injection ....	6	0	0	0	0	5	1
Total .....	336	54	93	51	47	74	17

*Comment.*—The above table shows that very few patients have been receiving the Mercado mixture, while 263 out of 336 have been receiving the wightiana ethyl ester with  $\frac{1}{2}$  per cent iodine.

The mixed treatment consisted in either a mixture of W. E. I., W. O., Mercado during the semester. Only 17 patients out of 336 have been taking this treatment.

Those patients who did not receive injection for the past six months were either advanced or had been suffering from contraindications as lepra reaction or nephritis.

#### RELATION BETWEEN AMOUNT OF DRUGS USED TO IMPROVEMENT

The following table, as in the preceding one, does not purport to give the exact relationship between the amount of drugs used to improvement to the end of the year for the reason that all these patients, remaining in segregation at the end of the year have not all been treated for a period of six months. A great number as shown in the preceding Table No. VII has been receiving treatment from 6 months to over 48 months. Therefore, the real improvement found at the end of the year will not be the result of the treatment for the preceding 6 months.

TABLE No. IX.—*Relation between amount of drugs used to improvement*

Amount in cubic centimeters	Group	Negative	Improved			Stationary	Worse
			Markedly	Moderately	Slightly		
0-25 .....	62	7	2	1	4	43	5
25-50 .....	60	12	8	4	16	18	2
50-75 .....	79	17	24	16	8	8	6
75-100 .....	73	11	32	17	6	3	4
100-125 .....	54	6	22	11	13	2	0
125-150 .....	6	1	3	2	0	0	0
Over 150 .....	2	0	2	0	0	0	0
Total .....	336	54	93	51	47	74	17



## BACTERIOLOGICAL EXAMINATIONS

The following table shows the general summary of the bacteriological examinations made from patients who were either negative already or who had sufficiently improved as to justify a bacteriological examination.

TABLE NO. X.—*Bacteriological Examinations*

1. Negative for first time .....	17
2. Negative for second time.....	15
3. Negative for third time .....	22
4. Candidate for parole that turned positive.....	2
5. Negative that turned positive during 6 months period observation .....	15
6. Negatives who died during the year.....	2
7. Paroled during the year .....	31
8. Continuously negative to the end of the year.....	54
9. Total negative at the end of the year, including paroled, died, and remaining.....	87
10. Total patients that became negative bacteriologi- cally during the year .....	100

*Comment.*—There were 17 negatives found for the first time; 15 for the second and 22 for the third. There were 2 negative candidates for paroled that turned positive; 2 negatives who died and 15 negatives that became positive during six months period of observation and 54 negatives remaining continuously negative to the end of the year. There was a total of 100 cases that became negative bacteriologically during the year, including 31 paroled, 2 negatives who died, 15 who became positive again, and 54 remaining negative to the end of the year.

## PAROLED NEGATIVES

There were 31 negatives paroled during the year. Of these there were 17 males and 17 females. The average stay in segregation of those paroled cases was 2 years.

Compared with previous years, the following figures are given below:

1927 .....	19 paroled.
1926 .....	18 paroled.
1925 .....	8 paroled.
1924 .....	55 paroled.
1923 .....	18 paroled.

The above figures were obtained from the annual reports of the district health officer of Cebu for those years.

From 1923 to the end of 1928, there had been paroled a total of 149 negatives from the camp. Of these, 2 were returned parolers, one being sent to Culion and the other at present in segregation at Cebu Leper Detention Camp.

The *type and the duration of leprosy on admission* among these parolers are given below:

	Macular	Nodular	Mixed	Neural	Total
To one year.....	6	5	1	0	12
Over 1-2 years.....	4	6	2	0	12
Over 2-3 years.....	1	1	0	0	2
Over 3 years.....	2	1	2	0	5
Total.....	13	13	5	0	31

*Comment.*—It will be seen that the great majority of these paroled cases have been suffering from their disease from a few months to two years, totalling 24 out of 31, and the type predominating was either macular or nodular with 13 cases each.

*Treatment* received while in segregation is given below:

	Males	Females	Total
Mixed drugs.....	16	13	29
W. E. I. alone.....	0	1	1
Mercado alone.....	1	0	1
Total.....	17	14	31

With regard to the *duration of treatment to the type of leprosy* the following table is given:

Duration of treatment	Macular	Nodular	Mixed	Total
To 1 year.....	6	2	1	9
Over 1-2 years.....	7	6	4	17
Over 2-3 years.....	0	5	0	5
Total.....	13	13	5	31

*Comment.*—It can be seen from the above that the macular type responded best to the treatment. Out of 13 macular (negatives) paroled, 6 had been treated for only 1 year, and 7 cases from 1 to 2 years. In the nodular type, however, out of 13 cases negative paroled, 2 were treated to 1 year; 6, from 1 to 2 years; and 5, from 2 to 3 years. In the mixed type, totalling 4, 1 was treated up to 1 year and 4 cases treated from 1 to 2 years.

For all types of leprosy, 9 cases had been treated to 1 year, duration; 17, from one to 2 years; and 5, from 2 to 3 years. None had been treated for a longer period.

## SUMMARY AND CONCLUSIONS

The present progress report discusses only the patients remaining in segregation to the end of the year, which totalled 336 (128) males and 108 females. Of these 82 per cent have presented to the Camp on admission, 18 per cent had been arrested or reported.

Relative frequency as far as age group is concerned showed that 60.7 per cent constituted patients whose ages were from 10 to 30 years.

One hundred eighty-eight patients (56 per cent) had negative family history of whom 162 (48.5%) denied having had any contact with known or suspected lepers; and 26 (7.5%) with history of contact with leper friends or acquaintances. One hundred forty-eight (148) or 44 per cent had positive history of leprosy in the family of whom the highest incidence occurred among cousins of first degree; brother or sister.

The majority of patients admitted in the camp showed the disease to be 1 year or less. One hundred seventy-three (173) or 51.8 per cent constitute this group; 77 or (23%) cases had their disease to 2 years or less, while few were over 3 years. The nodular type constituted 54.4 per cent of all types, followed by the mixed and macular 23.2 per cent and 21.1 per cent, respectively.

Relationship between type and duration of leprosy to improvement showed that the macular type responded best to treatment judging from the percentage of negatives obtained as well as the improvement in the remaining cases. Of the 50 cases under 1 year, 15 (30%) have become negative, as compared with 13 (12.6%) out of 183 nodular types and 4 (14%) out of 28 mixed cases.

Sixteen per cent (16%) of those remaining in segregation (54 out of 336 cases) have been continuously negative to the end of the year; 191 (57%) have shown improvement since admission; 74 (22%), stationary (due to the fact that those treated under 6 months have also been included in this report); while 17 (5%) had become worse.

The great number of negatives is found among those receiving the treatment from 24 to 30 months. Out of 35 patients in this group, 13 (37%) had become negative, showing that for early bacteriologically positive cases of leprosy at least 5 semesters are necessary to clear up the lesions.

The exact relationship between the drugs used to improvement cannot be shown in this report on account of the employment of mixed treatment before as well as the absence of a previous progress report from which a more or less exact estimate of the clinical improvement can be deduced. Similarly the true relationship between the amount of the drugs used to the improvement must necessarily be inaccurate as the present improvement noticed does not correspond exactly to the total amount of drugs used during this semester as many patients have been already treated before the preceding six months. Ninety-two (92), or 27.4 per cent, patient out of 336 have been treated under 6 months; 57 or 16.6 per cent, from 6 to 12 months; and the remaining 187 or 56 per cent, have been treated from over 1 year to four years.

Bacteriological examinations made showed that there were 100 patients who became bacteriologically negative during the year of whom 54 have been continuously negative to the end of the year, 31 had been already granted parole; 2 died and 15 became positive again during the six months period of observation.

A consideration of the patients granted parole during the year showed that out of 31 cases 26 were of the cutaneous type and 5 mixed, and that 12 cases had the disease to over one year; 12 from one to two years and 7 from 2 to over 3 years. The duration of treatment in relation to the number paroled are as follows: 17 had been treated from 1 to 2 years; 9 to one year only and 5 from 2 to 3 years.

BY THE GOVERNOR-GENERAL OF THE PHILIPPINE  
ISLANDS—A PROCLAMATION

No. 198

To the PEOPLE OF THE PHILIPPINE ISLANDS:

Recognizing the encouraging results obtained by the observance of Clean-Up-Week in the past, the far-reaching importance of this effort to the people of the Philippines, and the desirability of continuing its observance with a more united and concerted action, I, Henry L. Stimson, Governor-General of the Philippine Islands, do hereby designate and proclaim December seventeenth to twenty-third as the period in which to observe Clean-Up-Week throughout the Philippine Islands for the year nineteen hundred and twenty-eight.

Unattractive insanitary surroundings are inconsistent with the best traditions and ideals of a progressive people. On the other hand, a clean attractive environment is an expression of good health, progressiveness, and prosperity. Clean-up-Week offers an unusual opportunity for every community to display its civic pride, and affords the people a chance to do something for their community in return for the many things it does for them. I, therefore, earnestly request that all officials and employees of the Government and all other public-spirited people of these Islands unite in the observance of this great movement to the end that a vigorous clean-up-spirit may be permanently established among the people.

In witness whereof, I have hereunto set my hand and caused the seal of the Government of the Philippine Islands to be affixed.

Done at the City of Manila, this 11th day of December, in the year of our Lord nineteen hundred and twenty-eight.

(Sgd.) HENRY L. STIMSON  
*Governor-General*

Copy for:  
The Director of Health.

## LEPROSY CAMPAIGN IN THE PHILIPPINES—THE CEBU EXPERIMENT

By JOSE RODRIGUEZ  
*Philippine Health Service, Cebu, Cebu*

In the Budget for 1929 just approved by the Legislature, there is included an item of ₱125,000 which will enable the Philippine Health Service to undertake certain activities which will greatly improve the present methods of leprosy control. The modern leprosy treatment campaign started six years ago has given results which the people of this country may well be proud of. Hundreds of lepers have been rendered negative and returned to their homes, the treatment has been greatly improved and our knowledge of the disease advanced. In the light of these advances, further modifications to our present system appear to be necessary.

The desired modifications consist of the establishment of outdoor dispensaries where very early cases of leprosy may be treated without the need of segregating them. Besides these dispensaries, regional treatment stations or hospitals are to be established at certain strategic points for the segregation of the more hopeful bacteriologically positive and therefore dangerous cases, reserving Culion for the advanced practically hopeless ones. These steps are designed to attract the patient while still in the early stages of the disease when a comparatively rapid cure may be assured.

It is firmly believed that such steps aided by an intensive educational propaganda will eventually lead to the total eradication of the disease in a comparatively short time. Under the present methods, the disappearance of the disease from the Philippines cannot be expected for a long time to come because new cases hide out as long as possible so that when they are finally segregated, the disease has already progressed to a more or less advanced stage while one or two others have probably already been infected. By treating new cases in the early pre-infectious stage, the disease is cured and infection of other persons prevented without need of hospitalizing the patients.

The desired modifications outlined above have been given a thorough trial in Cebu during the past year and there is no doubt that they are effective in attracting the early cases and

in enlisting public support. This province was selected for this trial because it is the principal nidus or focus of leprosy in these islands. About one-half of all lepers admitted to Culion and San Lazaro come directly or indirectly, from Cebu. In the outdoor dispensary established last year in Cebu, the capital, over 4,000 cases of skin diseases of all kinds were treated and out of this number, 205 incipient lepers in the "pre-positive" stage were discovered and treated with very encouraging results. These cases were not segregated because they were still *negative* on bacteriological examination and, therefore, presumably not infectious. Lectures and demonstrations were given in the schools to teachers and pupils. Talks were also given in public demonstrations and meetings. This dispensary was supported by the province.

The Philippine Health Service is going to extend this work to other parts of the Islands. Treatment Stations or hospitals are now being built in Iloilo and Albay, while a number of detention camps will be constructed in Mindanao. A skin dispensary will also be maintained in the Ilocos provinces. Positive lepers found in the northern provinces are being brought to Manila in a special ambulance and hospitalized at San Lazaro.

Those in charge of the Wood Memorial Fund are coöperating closely with the Government in these activities. The donation of ₱360,000 made by Mr. Eversley Childs of New York for a treatment station in Cebu was most timely. When completed this hospital will be turned over to the Government and will be run by the Philippine Health Service. Research work on such phases of the leprosy problem as the question of the initial lesion, manner of transmission, epidemiological studies, etc., which cannot very well be done in Culion will be undertaken in the proposed dispensaries and treatment stations.

With the outlay of ₱125,000 provided for in the 1929 Budget and with the help which is assured by those in charge of the Wood Memorial Fund, added impetus to the scientific study of leprosy in these Islands which will greatly redound to the benefit of our people, may be expected in the near future.

(Inclosing 2 negative (1) showing patients with incipient leprosy waiting before the Cebu Skin Dispensary for their weekly injections and (2) showing view of the old Cebu Detention Camp.)

# PRELIMINARY REPORT OF THE VALUE OF INVESTIGATING DIARRHEAL DISEASES FOR POSSIBLE CASES OF CHOLERA AND THE NECESSITY OF INSTITUTING PROMPT MEASURES

TEOFILO CORPUS, M.D., C. P. H.  
*District Health officer of Bulacan*

In order to guard against the spread of cholera in any district during the entire period of the rainy season of each year especially when there is a threatening epidemic of the disease, or during the occurrence of isolated suspected cases of cholera in other districts, it is important to investigate as far as possible all diarrheal diseases personally, promptly, and individually. The diarrheal diseases include gastritis, gastro-enteritis, simple diarrhea and possibly others that may be caused by flagellates and cilliates. The investigation also must include cases and deaths. The primary object of this paper then is to bring out the importance of early detection as well as early suppression of cholera.

In the province of Bulacan, there occurred from January to November, 1928, 164 cases and 78 deaths from diarrhea and enteritis both under two years and over two years as shown in Table I as follows:

TABLE I.—Cases and deaths from diarrhea and enteritis by years in Bulacan

Months	Under two years		Over two years	
	Cases	Deaths	Cases	Deaths
January .....	9	8	5	3
February .....	8	6	9	3
March.....	5	3	12	5
April.....	6	3	7	3
May.....	8	8	3	0
June.....	10	9	20	6
July.....	10	7	24	2
August.....	3	3	7	3
September .....	0	0	5	0
October.....	3	3	6	2
November .....	1	1	3	0
Total.....	63	51	101	27

In the above table, the investigation of individual cases and deaths was actually begun on the month of July until the end of November. The local health officials were furnished the necessary forms for the investigation, which, when properly filled in,



were submitted to the district health officer regularly with the weekly health statistical reports.

Table II shows the total number investigated individually as follows:

TABLE II.—*Number of cases and deaths investigated individually*

Under one year:	
Cases .....	17
Death .....	14
Under two years:	
Cases .....	45
Death .....	7

The investigation of individual cases and deaths under one year gives 17 cases and 14 deaths and below 15 years of age 30 cases and 4 deaths. Only the latter were investigated minutely as the presence of cholera among infants under one year of age is not possible. Several factors were found to be the exciting and predisposing causes among which were: (1) faulty feeding; (2) dirty and contaminated foods and drinking water; (3) intestinal parasites complicating and aggravating the diarrhea and enteritis, followed with lowered vitality and decreased resistance; and (4) possibly other indefinite causes.

Of the 45 cases and 7 deaths over two years, fifteen cases and three deaths were adults, who were suffering from mild to grave conditions of gastric troubles. Of the 15 cases including deaths, three cases were found to be clinically positive of cholera, altho bacteriological examinations of the stools of these cases with those of contacts resulted negative. The history of each case which makes one think of the possibility of cholera is as follows:

Mr. A, 32 years, married, Santo Niño, Paombong, was taken ill with diarrhea and vomiting on July 8, 1928, at midnight and was obliged to go to bed the next day at 10 a. m. He was attacked with cholera in 1919, and had anticholera inoculation three times in 1919. No history of cholera in the family. During the first five days of his illness he ate "guinatang-mais" after which he was attacked with diarrhea and vomiting, cramps, frequent bowel movements with rice water stools, aphonia, feeble pulse and difficult urination simulating a typical cholera case.

Mr. B, 35 years, married, was taken sick in the fishpond, Sapang-Hagonoy, in the barrio of Atlag, Malolos, on July 25, 1928, at 8 a. m. and was obliged to go to bed on July 27 at 8 a. m. He was attacked with cholera in 1925, and had never received anti-cholera inoculation. No previous cases of cholera in the family. Within the first five days of his illness, he took "tuba" fish called "bia" and rice. He showed symptoms almost similar to the first case.

Mr. C, 55 years, married, San Jose, Paombong, was taken ill on August 15, 1928, at 4 a. m. and was obliged to go to bed on August 15 at 4 p. m.

He had no history of previous cholera, and was inoculated with anti-cholera vaccination on June, 1928. No previous cholera in the family. Within the first five days before his illness he ate "talangkang buro." He showed symptoms of cramps, vomiting, frequent bowel movements with rice-water stools, sunken eyes and slight aphonia. Urination and pulse were good.

All the above suspected cases of cholera were handled as such and proper sanitary measures immediately instituted. Quarantine of houses, isolation of contacts within the incubation period, proper disposal of excreta, control of drinking water and foods, disinfection and general inoculation with anti-cholera vaccination of all contacts and all persons in the community were done.

Following this procedure, it is believed that any impending epidemic of cholera may be detected promptly. It is also to be stated here that all cholera suspects and contacts detected in this preliminary study were treated with "cholera drops." All cases so treated got well. The treatment was started early. Not a single case occurred among contacts. The cases of cholera suspects had no relation with each other. The instructions of the Philippine Health Service in the use of this drug is as follows:

*For therapeutic purposes.*—Four cubic centimeters every half an hour or 2 cubic centimeters every 15 minutes in water, until an ounce of the medicine has been taken and then 4 cubic centimeters every hour until recovery.

*For prophylactic uses.*—Contacts should be given at least 4 cubic centimeters every day during the period of infectivity. (It should be clear, however, that the use of "cholera drops" as prophylactic is not a substitute for cholera vaccine.) Cholera drops should be given as early as possible as it is more effective when given before the collapse stage.

#### SUMMARY AND CONCLUSION

(1) Upon immediate investigation of all diarrheal diseases, possible cases of cholera may be promptly detected, and prompt sanitary measures instituted; and other diarrheal diseases properly eliminated;

(2) By prompt detection of cholera suspects, the spread may at once be available, and the disease easily controlled and suppressed; and

(3) With this preliminary study, it is believed that "cholera drops" will be of great value to the health officials both as prophylactic and curative treatment, the only objection being that too much time is employed in the administration of the drug to patients and contacts, as well as its nasty taste.

## FAJARDO DESCRIBES CULION LEPERS' LIFE

Owing to numerous requests made by families of lepers for an up-to-date description of the village life of the lepers in Culion, Director Fajardo of the Philippine Health Service, issued the following description:

Culion has now a leper population of over 6,400, of whom over 560 are confined in the different hospitals of the Colony. About 180 represents the employee and laboring classes so that, all in all, Culion may be said to be a good-sized town. The lay-out is much the same as any other of its kind in the Philippines, the light material construction predominating. The streets are well kept and a good many of the houses have adjoining plots planted to flowering shrubs. Tiendas line the streets and stores of the more pretentious sort are not wanting, with their stocks of local and imported goods. Many of the able-bodied men and women pursue the same occupation that they have before going to Culion. There are well appointed barber shops and recreation halls, and men may be seen at their wanted callings, like shoe and slipper-making, tailoring, and so on. An efficient police corps maintain good order in the colony and a fire brigade with stations at strategic points is constantly on duty. A good-sized library furnishes material for those literarily inclined and magazine and current periodicals are not wanting. When fresh expeditions come in there is general rejoicings in the colony and these newcomers are usually welcome with music. Daily, the residents of the neighboring islands, either in rafts or dugouts, come to sell their products, and during the month of October not less than 232 have visited the colony for purposes of trade. Boats calling at Culion usually bring visitors to the inmates and friends and families of employees come for like purposes. There were 43 such visitors during October and, in addition five Government officials and other distinguished persons visited the colony during the same period. The Jesuit Fathers minister to the spiritual needs of the population, and there are also Protestant pastors for those who belong to the different evangelical churches. The Sisters of Saint Paul are in constant attendance at the different hospital units. To make this village life complete, the Chief of the Culion Leper Colony acts as justice of the peace ex officio with jurisdiction all over the Culion reservation. The colony is governed by the Chief of the Colony assisted by an advisory council who are elected annually to represent the different ethnical groups.

## COMMON COLDS

With changeable weather, cases of cold or catarrh become frequent. Colds may be simple affair were it not for their awful consequences. Cold is a catching disease and may easily be communicated from one person to another. We are apt to look upon it as an ailment of no significance in our daily life, but neglected colds in many instances are the starting point of pulmonary tuberculosis.

Very young babies, the aged and those recovering from illness are the most susceptible to catch a cold, and it is necessary that they be given special care. If a person catches cold, proper clothing should be worn and he need not expose himself in the early morning air or late evenings. When the cold is especially severe and there is malaise or disinclination to work, and most especially in the presence of a slight fever, the patient must be kept in bed until the more acute symptoms disappear. The heavy toll from respiratory diseases will bear out our contention that cold is not a common ordinary affair to be disregarded. The body builds up natural defenses against disease, but same reason must counsel us prudence in everything, because it is in the means and not in the extremes that life may be preserved till old age when natural decay may be expected.

It is, therefore, very important to avoid colds if you don't have it and to try not to pass it on to other if you already have it.

Some of the measures by which colds may be prevented are:

1. Avoid persons who cough or sneeze.
2. Keep your fingers and pencils away from the mouth.
3. Use individual drinking cups when outside of the home.
4. Eat your meals regularly.
5. Work in well-ventilated rooms.
6. Sleep with the windows open.
7. Exercise in the open air.
8. Avoid alcoholic drinks. They poison the body and shorten life.
9. Protect your body with proper clothing.
10. Cover your nose or mouth with a handkerchief when coughing or sneezing or turn your face from others when doing so.
11. Wash your hands at frequent intervals.
12. Spitting upon side-walks and floors is dangerous.
13. If your cold does not disappear within a few days, watch out! Consult a physician if it persists after two weeks.
14. Tuberculosis of the lungs is amenable to treatment in its early stages, but when neglected, it is one of the most difficult to cure.
15. Colds may also be the beginning of influenza and while it may not kill, many a time may give rise to severe complications, if neglected.

## INFLUENZA

Scattered cases of influenza are being registered in different parts of the city. It is regretted to state that many of the cases go unreported. We appeal, therefore, to private practitioners and heads of families to report all suspicious cases to the Health Service so that proper steps may be taken to check the spread of the disease. While it is believed that the disease will not make any headway, because we are now at the beginning of the hot season, still, we should not be so sure that the disease will not spread. We should remember that a case is a real source of the disease from which other cases may follow and multiply. We have to rely upon early reports to keep down the spread of the disease. The coöperation, therefore, of all concerned is earnestly solicited.

General methods of control:

- (a) Compulsory reporting.
- (b) Isolation. The isolation of patients suffering from influenza should be practiced.
- (c) Placarding. In cases of unreasonable carelessness and disregard of the public interests placarding should be enforced.
- (d) Hospitalization if possible.
- (e) The aged and feeble should be kept so far as possible from possible sources of infection.
- (f) If the disease invades institutions, the sick, suspects and carriers should be isolated as soon as the first symptoms are seen.
- (g) Vomits and bodily discharges, especially those from nose and throat should be disinfected for preventing droplet infection.
- (h) Prohibition of use of common cups and improperly washed glasses at public drinking places.
- (i) The attendant of the cases should wear a gauze mask.
- (j) During epidemics, persons should avoid crowded assemblages, street cars, and the like.
- (k) Education as regards the danger of promiscuous coughing and spitting.
- (l) Patients, because of the tendency to the development of bronchopneumonia, should be treated in well-ventilated, warm rooms and kept in bed for three or four days after the subsidence of fever, during epidemics.
- (m) Immunization and vaccines. In the last epidemic of 1918 vaccines have been used in the United States and Europe to accomplish: first, the prevention or mitigation of complications recognized as due to the influenza bacillus or to various strains of streptococci and pneumococci.
- (n) Terminal disinfection for influenza has no advantage over cleaning, sunning and airing.

## MISCELLANEOUS

---

### ABRA

The health condition in the town of Lagangilang is good. Some cases of malaria were registered during December. Prophylactic and curative doses of quinine were given in the barrios where some malaria were found.

### MINDORO

The general health conditions in the town of Baco were found satisfactory; spoiled canned goods found in the tiendas were confiscated and condemned; the municipal building not yet been provided with a closet and the municipal president and councilors present requested to appropriate funds for the purpose.

### NUEVA VIZCAYA

The most important accomplishments during this month are: The inspection of 126 drinking wells; 839 anti-smallpox vaccinations performed, with 760 inspections resulting into 392 positives and 368 negatives; 290 patients were given available treatments in their homes and 18 public schools inspected.

### SORSOGON

The general health conditions during the month of December of the district were excellent. The health barometer reading being below normal in spite of the fact that sporadic cases of influenza, although few in number, were registered. The diseases that prevailed during December were bronchitis, congenital debility, tuberculosis of the respiratory system, and infantile beriberi.

### ZAMBOANGA

The outstanding events accomplished this month are: the inspection of grocery stores; the destruction and confiscation of 10 tins of various canned goods in the presence of owners, Laureano Malaso and Vicente Alvarez of Cabaluay, a barrio of the municipality of Zamboanga.

### THE WARNINGS AND THE SPITTERS

The Health Service issues statements, bulletins, advices and warning which maintain, among other things, the dangers from spitting on sidewalks and in other many places, yet the sidewalks in every places are virtually coated much of the time and nothing seems to be done to stop it, nothing further than the issuing of the aforementioned statements, bulletins, advices, and warning.

The people who most need lesson in cleanliness and sanitation do not read health service literature. A more direct warning is required to reach them and to teach them.

**SKIMMED MILK SALE PROPOSED AND DISCUSSED**

The amendment of section 1573 of the Administrative Code, so as to allow the sale of skimmed milk, provided it contains enough vitamins suitable for the nourishment of infants of less than one year, was discussed at a joint meeting of the members of the Council of Hygiene and the Pure Food Boards.

The Council of Hygiene decided to request the department of the University to conduct animal experimentation and the Philippine General Hospital to make a clinical observation in order to determine qualitatively and quantitatively the vitamin contents of skimmed milk.





# GENERAL STATISTICS

[Unless otherwise stated, these statistics are for the month of December, 1928]

## ESTIMATED POPULATION OF THE CITY OF MANILA FOR THE YEAR 1928<sup>1</sup>

### BY NATIONALITIES

Nationality	Population
Americans.....	3,184
Filipinos.....	298,265
Spaniards.....	1,955
Other Europeans.....	1,126
Chinese.....	17,856
All others.....	2,186
Total.....	324,522

<sup>1</sup> Estimated on the basis of last figures published by the Census Office.

### BY DISTRICTS

Districts	Population
<b>No. I, MEISIC:</b>	
1. Tondo.....	81,785
2. San Nicolas.....	29,544
3. Binondo.....	17,852
Total.....	129,181
<b>No. II, SAMPALOC:</b>	
4. Santa Cruz.....	52,911
5. Quiapo.....	16,066
6. San Miguel.....	4,491
7. Sampaloc.....	40,210
Total.....	113,678
<b>No. III, PACO:</b>	
8. Port Area.....	4,878
9. Intramuros.....	14,813
10. Ermita.....	16,347
11. Malate.....	16,683
12. Paco.....	16,244
13. Pandacan.....	5,937
14. Santa Ana.....	6,761
Total.....	81,663
Grand total.....	324,522

**METEOROLOGICAL REPORT FOR MANILA CENTRAL OBSERVATORY DEDUCED  
FROM HOURLY OBSERVATIONS, DECEMBER, 1928**

Date	Pres- sure <sup>1</sup> mean	Temperature						
		In shade <sup>2</sup>					Underground	
		Mean	Absolute maxi- mum	Day	Absolute mini- mum	Day	0.50 m.	
							8 a. m. mean	2 p. m. mean
	mm.	°C.	°C.		°C.		°C.	°C.
1-10.....	760.39	25.3	33.4	6	19.9	5	28.2	28.4
11-20.....	59.49	25.1	32.0	16	19.4	20	27.8	28.1
21-31.....	60.63	24.9	32.6	27	19.4	28	27.4	27.7

Date	Relative humidity				
	Mean	Daily mean maxi- mum	Day	Daily mean mini- mum	Day
	Per cent	Per cent		Per cent	
1-10.....	80.0	87.7	9	76.2	6, 7
11-20.....	78.2	83.2	14	71.3	20
21-31.....	77.3	84.1	24	72.5	21

Date	Prevailing direction	Wind			Atmidometer <sup>3</sup> (open air)		
		Velocity			Total	Daily maxi- mum	Day
		Total	Daily total maxi- mum	Day			
		Kms.	Kms.		mm.	mm.	
1-10.....	NE.	1,327.0	184.5	8	29.1	3.9	7
11-20.....	NE.	1,133.5	168.5	20	25.1	4.7	20
21-31.....	NE.	1,373.5	213.0	21	37.5	4.6	28

Date	Sunshine			Rainfall	
	Total	Daily maxi- mum	Day	Total	Rainy days
	h. m.	h. m.		mm.	
1-10.....	69 35	10 45	2	10.2	1
11-20.....	43 55	8 35	20	4.0	2
21-31.....	71 30	10 05	25	0.0	0

<sup>1</sup> Corrected for instrumental error and for temperature and reduced to sea level. Correction to standard gravity,—1.72 mm.

<sup>2</sup> These values are taken from instruments mounted in the Observatory Park, 1.5 meters above ground.

**NUMBER OF BIRTHS AND BIRTH RATES PER 1,000 REPORTED IN THE CITY  
OF MANILA BY NATIONALITIES**

[Stillbirths not included]

Nationality	Male	Female	Total	Annual birth rates per 1,000
Americans.....	12	7	19	71.43
Filipinos.....	783	700	1,483	58.58
Spaniards.....	1	1	1	6.03
Other Europeans.....	4	3	7	73.24
Chinese.....	56	38	94	62.02
All others.....	6	9	15	80.85
Total and average.....	861	758	1,619	58.78

## NUMBER OF BIRTHS REPORTED IN THE CITY OF MANILA BY DISTRICTS

(Stillbirths not included)

Districts	Legitimates			Illegitimates			Grand total
	Male	Female	Total	Male	Female	Total	
<b>No. I, MEISIC:</b>							
1. Tondo.....	252	189	441	9	6	15	456
2. San Nicolas.....	43	34	77	1	4	5	82
3. Binondo.....	39	30	69	1	1	2	71
Total.....	334	253	587	11	11	22	609
<b>No. II, SAMPALOC:</b>							
4. Santa Cruz.....	117	111	228	3	6	9	237
5. Quiapo.....	15	17	32	2	2	4	36
6. San Miguel.....	16	17	33	2	2	4	35
7. Sampaloc.....	136	117	253	11	14	25	278
Total.....	284	262	546	16	24	40	586
<b>No. III, PACO:</b>							
8. Port Area.....	26	19	45	3	3	6	51
9. Intramuros.....	43	44	87	2	1	3	90
10. Ermita.....	70	73	143	2	1	3	146
11. Malate.....	35	31	66	1	2	3	69
12. Paco.....	13	17	30	1	1	2	31
13. Pandacan.....	21	19	40	1	1	2	40
14. Santa Ana.....	21	19	40	1	1	2	40
Total.....	208	203	411	8	5	13	424
Grand total.....	826	718	1,544	35	40	75	1,619

Attended by physicians, living, 490; stillbirths, 37.

Attended by midwives, living 156; stillbirths, 3.

Attended by families, living, 973; stillbirths, 24.

## NUMBER OF DEATHS AND DEATH RATES PER 1,000 AMONG RESIDENTS IN THE CITY OF MANILA BY NATIONALITIES

(Stillbirths not included)

Nationality	Male	Female	Total	Annual death rates per 1,000
Americans.....				
Filipinos.....	294	248	542	21.41
Spaniards.....	1	1	2	12.05
Other Europeans.....	1	1	2	20.33
Chinese.....	14	8	22	14.52
All others.....	1	1	2	5.39
Total and average.....	311	258	569	20.66

## NUMBER OF DEATHS AMONG RESIDENTS IN THE CITY OF MANILA BY DISTRICTS

[Stillbirths not included]

Districts	Male	Female	Total
<b>No. I, MEISIC:</b>			
1. Tondo.....	74	86	160
2. San Nicolas.....	24	14	38
3. Binondo.....	10	8	18
<b>Total.....</b>	<b>108</b>	<b>108</b>	<b>216</b>
<b>No. II, SAMPALOC:</b>			
4. Santa Cruz.....	66	38	104
5. Quiapo.....	11	7	18
6. San Miguel.....	2	5	7
7. Sampaloc.....	46	44	90
<b>Total.....</b>	<b>125</b>	<b>94</b>	<b>219</b>
<b>No. III, PACO:</b>			
8. Port Area.....			
9. Intramuros.....	13	11	24
10. Ermita.....	9	7	16
11. Malate.....	28	24	52
12. Paco.....	17	6	23
13. Pandacan.....	8	3	11
14. Santa Ana.....	3	5	8
<b>Total.....</b>	<b>78</b>	<b>56</b>	<b>134</b>
<b>Grand total.....</b>	<b>311</b>	<b>258</b>	<b>569</b>

NUMBER OF DEATHS BY SOCIAL CONDITIONS IN THE CITY OF MANILA,  
TRANSIENTS INCLUDED

[Stillbirths not included]

Social conditions	Male	Female
Married.....	102	86
Divorced.....		
Widowed.....	42	54
Single.....	214	153
Conditions not stated.....	3	1
<b>Total.....</b>	<b>361</b>	<b>294</b>
<b>Grand total.....</b>	<b>655</b>	

Stillbirths, 64.

## NUMBER OF DEATHS BY AGES IN THE CITY OF MANILA

[Stillbirths not included]

Age	Residents		Transients		Total
	Male	Female	Male	Female	
Under 1 year.....	102	64	6	7	179
1 year plus.....	22	25	2	2	51
2 years plus.....	5	7	2	1	15
3 years plus.....	5	4	3	1	13
4 years plus.....	2	3		1	6
5 to 9 years.....	5	9			14
10 to 14 years.....	4	4	1	1	10
15 to 19 years.....	7	13	2		22
20 to 24 years.....	20	10	6	6	42
25 to 29 years.....	10	19	6	5	40
30 to 34 years.....	13	10	5	3	31
35 to 39 years.....	13	13	2	1	29
40 to 44 years.....	12	9	3	1	25
45 to 49 years.....	13	6	2	2	23
50 to 54 years.....	8	5	1	3	17
55 to 59 years.....	15	7			22
60 to 64 years.....	15	7	2		24
65 to 69 years.....	17	6	1		24
70 to 74 years.....	7	5	1		13
75 to 79 years.....	8	7			15
80 to 84 years.....	3	9			12
85 to 89 years.....	2	3			5
90 to 94 years.....	1	6			7
95 to 99 years.....	2	4			6
100 years and over.....		3			3
Age not stated.....					
Total.....	311	258	49	34	652

NOTE.—One male Filipino, age unknown, and two females, about 70 years and age unknown, permanent residence are unknown, not included in the above table.



57	Diabetes mellitus.....	2							2
58	Anemia, chlorosis:								
59	a. Pernicious anemia.....		1						1
62	Diseases of the thymus gland.....	1							1
66	Alcoholism (acute or chronic).....	1							1
69	Other general diseases.....		1						1
70-86	III. Diseases of the nervous system and of the organs of special sense								
70	Encephalitis.....	1							1
71	Meningitis:								
72	a. Simple meningitis.....	4	4						8
72	b. Nonepidemic cerebrospinal meningitis.....	1	1						2
74	Tabes dorsalis ( locomotor ataxia).....							1	1
74	Cerebral hemorrhage, apoplexy:								
75	a. Cerebral hemorrhage.....	7	2					1	10
75	Paralysis without specified cause:								
76	a. Hemiplegia.....	2							2
77	b. Others under this title.....	2							2
78	Other forms of mental alienation.....	4							4
78	Epilepsy.....	1							1
87-96	IV. Diseases of the circulatory system								
89	Angina pectoris.....	3							3
90	Other diseases of the heart.....	9	2				1		13
91	Diseases of the arteries:								
92	a. Arteriosclerosis.....	1					1		2
92	b. Embolism and thrombosis (not cerebral).....	1							1
97-107	V. Diseases of the respiratory system								
99	Bronchitis:								
99	a. Acute.....	10	10						20
99	b. Chronic.....		1						1
100	Bronchopneumonia:								
100	a. Bronchopneumonia.....	24	24				1		49
101	b. Capillary bronchitis.....	1	2						3
101	Pneumonia:								
101	a. Lobar.....	6	4						10
102	b. Unspecific d.....	1	1						2
105	Pleurisy.....	3	2						5
105	Asthma.....	3	3						6
107	Other diseases of the respiratory system (tuberculosis ex- cepted):								
107	c. Others under this title.....	1							1
108-127	VI. Diseases of the digestive system								
111	Ulcer of the stomach and duodenum:								
111	a. Ulcer of the stomach.....	2	2				2		6







# NUMBER OF DEATHS BY NATIONALITY AND SEX, OCCURRING AMONG TRANSIENTS IN THE CITY OF MANILA

[Stillbirths not included]

International list number (revision of 1920)	Causes of death	Americans		Filipinos		Spaniards		Other Europeans		Chinese		All others		Total
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1-42	<i>I. Epidemic, endemic, and infectious diseases</i>													
1	Typhoid and paratyphoid fever:													
	a. Typhoid fever.....			5	1									6
10	Diphtheria.....			4	2									6
13	Mumps.....			1										1
16	Dysentery.....													
	b. Bacillary.....			1										2
28	Rabies.....	1		1										1
29	Tetanus.....													
	b. Others.....			4	1									5
31	Tuberculosis of the respiratory system.....			6	4									10
43-69	<i>II. General diseases not included in Class I</i>													
44	Cancer and other malignant tumors of the stomach, liver.....													
49	Cancer and other malignant tumors of other or unspecified organs.....													
55	Beriberi.....			1										1
	a. Infants.....													
69	Other general diseases.....			1	1									1
70-86	<i>III. Diseases of the nervous system and of the organs of special sense</i>													
71	Meningitis:													
	a. Simple meningitis.....			1										1
	b. Nonepidemic cerebrospinal meningitis.....			3										3
74	Cerebral hemorrhage, apoplexy:													
	a. Cerebral hemorrhage.....			1	1									2
76	General paralysis of the insane.....			1										2
77	Other forms of mental alienation.....			1										1
87-96	<i>IV. Diseases of the circulatory system</i>													
88	Endocarditis and myocarditis (acute).....			1										1
90	Other diseases of the heart.....				1									1



**INFANT MORTALITY: DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS  
IN THE CITY OF MANILA, DURING THE MONTH OF DECEMBER, 1928 (INCLUDING TRANSIENTS)**

[Stillbirths not included]

Causes of death	Grand total	Age at death under 1 month												
		Under 1 day		1 to 7 days		8 to 14 days		15 to 21 days		22 to under 30 days		Total under 1 month		
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
All causes .....	108	71		14	12	15	11	8	3	4	5	1	45	31
COMMUNICABLE DISEASES:														
Typhoid and paratyphoid fever (1)														
Smallpox (6)														
Measles (7)														
Whooping-cough (9)														
Diphtheria (10)														
Influenza (11)														
Asiatic cholera (14)														
Dysentery (16)														
Meningococcus meningitis (24)														
Other epidemic and endemic diseases (25)														
Tetanus (29)														
Other infectious diseases (1-42) :														
Berberi (55)														
Diseases of the nervous system (70; 71; 80; 85)														
Respiratory diseases (90; 100; 101; 107)														
Gastro-intestinal diseases (108; 109; 113; 115; 116; 127)														
Congenital malformations (159)														
Early infancy (160; 161; 162; 163)														
All other causes (42-206)¹														

¹ Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

INFANT MORTALITY DEATHS UNDER ONE YEAR OF AGE FROM IMPORTANT CAUSES, BY SEX AND SMALL AGE GROUPS IN THE CITY OF MANILA, DURING THE MONTH OF DECEMBER, 1928 (INCLUDING TRANSIENTS)—Continued

[Stillbirths not included]

Causes of death	Age at death under 1 year																							
	1 month + months																							

1 Other than those specified above.

NOTE.—Number in parenthesis are the corresponding numbers in the International List of Causes of Death.

## ANTI-PLAGUE CAMPAIGN IN THE CITY OF MANILA

Number of spring traps set .....	20,928
Number of rats caught by spring traps.....	2,489
Number of cage wire traps set.....	514
Number of rats caught by cage wire traps.....	1
Number and kind of baits (coconuts).....	22,239
Number of poison portions placed.....	22,544
Number of rats found poisoned.....	302
Number of rats killed by clubs and other weapons.....	89
Number of rats found dead from other causes.....	119
Total number of rats otherwise caught, found dead or killed .....	3,000
Total number of rats sent to the laboratory for examination .....	3,000
Total number of rats found positive for plague .....	0

TYPHOID AND PARATYPHOID FEVER REPORTED DURING THE MONTH OF DECEMBER, 1928, CITY OF MANILA

CONFIRMED CASES

Health districts	Hospital				Home				Total				Grand total		
	Male		Female		Male		Female		Male		Female		Cases	Deaths	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths					
I.	No. 1	6	1	2	1	1	1	2	2	7	1	4	3	11	4
	No. 2	3	2	1	1					3	2	1	1	4	3
	No. 3														
	No. 4	6	3	2	1					6	3	2	1	8	4
	No. 5	1		2						1		2		2	
	No. 6	1								1				1	
	No. 7	2	1							2	1			2	1
	No. 8														
II.	No. 9														
	No. 10	1		3				1		1		4		5	
	No. 11	5	1	3						5	1	3		8	1
	No. 12	1		1						1		1		2	
	No. 13			1										1	
	No. 14														
	Grand total	25	8	15	3	1		3	2	26	8	18	5	44	13

REMARKS:

Cases confirmed as typhoid fever	42
Cases confirmed as paratyphoid fever	2
By autopsy	1
By blood culture	1
By Widal reaction	25
By urine examination	0
By feces examination	0
By clinical symptoms	17
Cases reported among nonresident persons not included in the table	25
Deaths reported among nonresident persons not included in the table	6

Typhoid carrier—None.

**CHOLERA REPORTED DURING THE MONTH OF DECEMBER, 1938, CITY OF MANILA**  
**CONFIRMED CASES**

Health districts	Hospital						Home						Total						Grand total	
	Male			Female			Male			Female			Male			Female				
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths
I. ....	No. 1.	.....		No. 2.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 2.	.....		No. 3.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 3.	.....		No. 4.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 4.	.....		No. 5.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
II. ....	No. 5.	.....		No. 6.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 6.	.....		No. 7.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 7.	.....		No. 8.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 8.	.....		No. 9.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 9.	.....		No. 10.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 10.	.....		No. 11.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
III. ....	No. 11.	.....		No. 12.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 12.	.....		No. 13.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 13.	.....		No. 14.	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
	No. 14.	.....			.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....
Grand total	.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....		.....	.....

## REMARKS:

No nonresident case was reported during the month.

Cholera carrier—3



**DIPHtheria REPORTED DURING THE MONTH OF DECEMBER, 1928, CITY OF MANILA**  
**CONFIRMED CASES**

729

Health districts	Hospital				Home				Total				Grand total	
	Male		Female		Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
I.....	No. 1.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 2.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 3.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 4.....	4	1	.....	.....	.....	.....	.....	4	.....	1	.....	5	.....
II.....	No. 5.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 6.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 7.....	5	1	2	.....	.....	.....	.....	5	1	2	.....	7	1
	No. 8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 9.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	No. 10.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
III.....	No. 11.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 12.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	No. 13.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....
	No. 14.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Grand total.....	12	1	4	1	.....	.....	.....	.....	12	1	4	1	16	2

**REMARKS:**

Cases reported among nonresident persons not included in the table..... 8

Deaths reported among nonresident persons not included in the table..... 6

Diphtheria carrier—11.

## DYSENTERIES REPORTED DURING THE MONTH OF DECEMBER, 1928, CITY OF MANILA

## CONFIRMED CASES

Health districts	Hospital						Home				Total				Grand total	
	Male			Female			Male		Female		Male		Female		Cases	Deaths
	Cases	Deaths		Cases	Deaths		Cases	Deaths			Cases	Deaths				
I. { No. 1. ....	3	1		2	1						3	1			5	1
{ No. 2. ....	1										1				1	1
{ No. 3. ....																
II. { No. 4. ....				1									1		1	
{ No. 5. ....	1										1				1	
{ No. 6. ....								1					1		1	1
{ No. 7. ....							2	2			2	2			2	2
{ No. 8. ....																
{ No. 9. ....	2										2				2	
{ No. 10. ....	1	1									1	1			1	1
{ No. 11. ....	1			2			1	1			2	1	2		4	1
{ No. 12. ....																
{ No. 13. ....																
{ No. 14. ....																
Grand total.....	9	2		5	1		3	3	1	1	12	5	6		18	7

## REMARKS:

Amoebic dysentery.....  
 Bacillary dysentery.....  
 Unspecified.....  
 Cases reported among nonresident persons not included in the table.....  
 Deaths reported among nonresident persons not included in the table.....  
 Dysentery carrier—None.

**OTHER COMMUNICABLE AND MOST COMMON DISEASES REPORTED IN THE  
CITY OF MANILA DURING THE MONTH OF DECEMBER, 1928**

**RESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	38	9		
Varicella.....	8	3		
Varioloid.....				
Smallpox.....				
Measles.....	5	3		1
Whooping cough.....		1		1
Influenza.....	7	6	4	8
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	175	148	65	62
Tuberculosis of the other organs.....	5	12	5	12
Beriberi, infantile.....	25	9	25	9
Beriberi, adults.....	1	1	1	1

**NONRESIDENTS**

Diseases	Cases		Deaths	
	Male	Female	Male	Female
Malaria.....	26	7		
Varicella.....	1			
Varioloid.....				
Smallpox.....				
Measles.....	1			
Whooping cough.....				
Influenza.....	4			
Bubonic plague.....				
Encephalitis lethargica.....				
Meningitis cerebrospinal epidemic.....				
Tuberculosis of the respiratory system.....	24	24	6	4
Tuberculosis of the other organs.....				
Beriberi, infantile.....	1	1	1	1
Beriberi, adults.....				

**REPORT OF THE DISTRIBUTION OF ASSORTED SERA AND VACCINES FOR THE  
MONTH OF DECEMBER, 1928**

Sera and vaccines	On hand December 1, 1928	Received during the month	Total to be accounted for	Distributed during the month	Remaining at the end of the month
Anti-diphtheric serum (tubes).....	180	100	280	184	146
Anti-dysenteric serum (ampoules).....	88	150	238	234	4
Anti-tetanic serum (units).....					
Cholera vaccine (c.c.).....		18,000	18,000	18,000	
Dried vaccine virus (units).....	6,000	100,000	106,000	86,300	19,700
Dysenteric vaccine (c.c.).....		15,000	15,000	15,000	
Fresh vaccine virus (units).....	56,900	200,000	256,900	154,000	102,900
Gonococcus vaccine (ampoules).....		25	25	25	
Mixed typhoid-cholera vaccine (c.c.).....	180	90,000	90,180	90,180	
Normal horse serum (ampoules).....					
Typhoid vaccine (c.c.).....	320	15,000	15,320	13,500	1,820

## REPORT OF ANTISMALLPOX VACCINATIONS IN THE CITY OF MANILA DURING THE MONTH OF DECEMBER, 1928

Health districts	Municipal districts	Vaccinations			Inspection of persons vaccinated						Total		
		Total vaccinations	Previously vaccinated		Under 1 year		1 to 4 years		5 years and over				
			Never	Successfully	Unsuccessfully	Positive	Negative	Positive	Negative	Positive		Negative	
No. 1.	Tondo.....	453	410	26	17	353	11	23	2	376	13		
	San Nicolas.....	395	58	334	3	57	1	2	1	59	2		
	Binondo.....	86	77	.....	9	57	1	1	.....	58	1		
	Santa Cruz.....	1,065	273	770	22	312	7	35	2	429	48		
No. 2.	Quiapo.....	61	46	12	3	56	1	3	1	57	5		
	San Miguel.....	30	28	.....	2	22	.....	14	.....	22	.....		
	Sampaloc.....	333	277	34	22	203	12	12	.....	217	12		
	Port Area.....	3	3	.....	.....	1	1	.....	.....	1	1		
No. 3.	Intramuros.....	118	81	22	15	52	5	5	.....	57	6		
	Ermita.....	39	33	.....	6	29	2	5	4	38	2		
	Malate.....	99	89	3	7	83	4	3	1	86	6		
	Paco.....	122	113	2	7	73	3	1	.....	74	3		
	Pandacan.....	23	22	.....	1	11	1	.....	.....	11	1		
	Santa Ana.....	0	36	2	2	36	2	.....	.....	36	2		
	Total.....	2,867	1,546	1,205	116	1,345	51	89	8	434	51	1,868	110

## VACCINE VIRUS:

Remaining from last month.....	Unit	3,820
Received during the month.....	Unit	6,000
Used during the month.....	Unit	4,375
Remaining for the next month.....	Unit	5,445
Total.....	Unit	9,820
		9,820

**ANTIDYSENTERY VACCINATIONS PERFORMED IN THE CITY OF MANILA  
DURING THE MONTH OF DECEMBER, 1928<sup>1</sup>**

Health Districts	Municipal Districts	First injection		Second injection		Total	
		V.	R.	V.	R.	V.	R.
No. 1.....	{Tondo.....	7		8		15	
	{San Nicolas.....	5		5		10	
	{Binondo.....						
No. 2.....	{Santa Cruz.....	105		155		260	
	{Quiapo.....	8		8		16	
	{San Miguel.....	11		2		13	
	{Sampaloc.....	768		600		1,368	
No. 3.....	{Port Area.....						
	{Intramuros.....	10		10		20	
	{Ermita.....						
	{Malate.....	15				15	
	{Paco.....						
	{Pandacan.....						
	{Santa Ana.....						
	Total.....	929		788		1,717	

<sup>1</sup> V., in persons never vaccinated before; R., revaccinations.

**ANTITYPHOID AND ANTICHOLERA VACCINATIONS PERFORMED IN THE CITY  
OF MANILA DURING THE MONTH OF DECEMBER, 1928<sup>1</sup>**

Health Districts	Municipal Districts	First injection		Second injection		Third injection		Total	
		V.	R.	V.	R.	V.	R.	V.	R.
No. 1.....	{Tondo.....	133	2,509	69	2,594	59	2,812	261	7,415
	{San Nicolas.....	42	858	38	759	15	658	95	2,275
	{Binondo.....		638		613		507		1,768
No. 2.....	{Santa Cruz.....	181	1,704	147	1,511	113	2,090	441	5,305
	{Quiapo.....	11	431	13	483	25	452	49	1,366
	{San Miguel.....								
	{Sampaloc.....	146	1,744	98	1,901	85	1,943	329	5,588
No. 3.....	{Port Area.....								
	{Intramuros.....	37	787	56	836	38	792	131	2,415
	{Ermita.....	9	1,025	4	1,182	1	1,188	14	3,395
	{Malate.....	44	827	43	858	43	866	130	2,551
	{Paco.....	69	1,780	55	1,771	46	1,795	170	5,346
	{Pandacan.....								
	{Santa Ana.....	21	969	16	750	10	665	47	2,384
	Total.....	693	13,272	539	13,258	435	13,268	1,667	39,798

<sup>1</sup> Mixed typhoid and cholera vaccine used for the first and second injections.  
Typhoid and paratyphoid vaccine used for the third injections.  
V., in persons never vaccinated before; R., revaccinations.

**CONSOLIDATED—ANTISMALLPOX VACCINATIONS RECEIVED  
FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	Vaccinations			
	Total vaccina- tions	Previously vaccinated		
		Never	Success- fully	Unsuccess- fully
Abra.....	14,652	2,351	4,106	8,195
Agusan.....	8,654	2,734	1,859	4,061
Albay.....	43,538	10,006	12,430	21,102
Antique.....	23,939	7,333	10,061	6,545
Bataan.....	12,149	4,972	2,150	5,027
Batanes.....	2,667	251	1,245	1,171
Batangas.....	65,819	18,325	18,698	28,796
Bohol.....	70,855	19,349	22,605	28,901
Bukidnon.....	9,259	3,342	1,695	4,222
Bulacan.....	45,083	14,324	17,448	13,311
Cagayan.....	110,037	18,685	76,013	15,339
Camarines Norte.....	8,452	2,593	2,353	3,506
Camarines Sur.....	31,436	7,589	7,511	16,336
Capiz.....	46,397	12,358	18,174	15,865
Catanduanes.....	30,076	3,791	11,131	15,154
Cavite.....	132,583	9,428	110,369	12,786
Cebu.....	144,778	37,175	28,355	79,248
City of Baguio.....	53	8	27	18
Cotabato.....	32,985	11,893	10,021	11,071
Davao.....	36,746	13,669	12,683	10,394
Ilocos Norte.....	148,721	8,989	112,425	27,307
Ilocos Sur.....	34,241	8,933	7,242	18,066
Iloilo.....	154,201	46,190	76,581	31,430
Isabela.....	21,319	4,671	4,476	12,172
Laguna.....	134,931	12,710	103,201	19,020
Lanao.....	18,019	5,395	8,048	4,576
La Union.....	30,206	6,105	410	23,691
Leyte.....	171,182	52,222	57,330	61,630
Marinduque.....	13,681	2,253	7,948	3,480
Masbate.....	50,689	6,499	30,964	13,226
Mindoro.....	9,653	2,342	1,901	5,410
Misamis.....	38,691	13,533	2,933	22,225
Mountain Province.....	48,090	16,860	15,940	15,290
Nueva Ecija.....	105,971	20,899	56,317	28,755
Nueva Vizcaya.....	6,879	1,714	954	4,211
Occidental Negros.....	119,973	38,604	51,194	30,175
Oriental Negros.....	51,313	17,626	13,289	20,398
Palawan.....	5,751	1,311	2,083	2,357
Pampanga.....	29,365	12,276	1,647	15,442
Pangasinan.....	106,001	28,208	26,622	51,171
Rizal.....	37,190	8,917	20,364	7,909
Romblon.....	11,222	2,583	3,590	5,049
Samar.....	72,372	15,478	20,392	36,502
Sorsogon.....	84,871	15,188	38,295	31,388
Sulu.....	28,379	11,697	7,109	9,573
Surigao.....	13,397	3,981	2,686	6,730
Tarlac.....	32,009	7,218	18,839	5,952
Tayabas.....	47,461	15,695	12,628	19,138
Zambales.....	8,994	2,867	1,113	5,014
Zamboanga.....	20,896	8,161	2,065	10,670
Total.....	2,525,826	599,301	1,077,520	849,005

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED ANTISMALLPOX VACCINATIONS RECEIVED FROM THE  
PROVINCES SINCE JANUARY, 1928—Continued**

Provinces	Inspection of persons vaccinated							
	Under 1 year		1 to 4 years		5 years and over		Total	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Abra.....	1,236	582	2,548	1,645	2,554	4,308	6,338	6,535
Agusan.....	481	303	758	855	1,145	888	2,384	2,046
Albay.....	5,022	2,119	5,044	1,810	6,571	5,328	16,637	9,267
Antique.....	2,587	645	3,407	1,468	3,295	3,258	9,289	5,371
Bataan.....	2,823	493	3,325	1,286	1,542	811	7,690	2,590
Batanes.....	220	118	369	242	898	590	1,487	950
Batangas.....	8,945	2,070	12,323	5,544	13,087	11,529	34,355	19,143
Bohol.....	6,950	2,806	10,467	4,923	18,822	16,180	36,239	23,909
Bukidnon.....	293	156	769	584	2,176	2,497	3,238	3,237
Bulacan.....	9,132	1,944	8,561	3,552	8,887	6,645	26,580	12,141
Cagayan.....	6,230	1,490	9,450	3,097	28,076	31,404	43,756	35,991
Camarines Norte.....	1,435	395	2,703	739	1,394	744	5,532	1,878
Camarines Sur.....	3,788	1,766	5,799	2,580	8,550	5,112	18,177	9,458
Capiz.....	3,996	992	5,403	2,140	14,401	7,826	23,800	10,958
Catanduanes.....	2,456	1,190	3,502	1,500	5,899	5,051	11,857	7,741
Cavite.....	6,412	2,441	9,255	5,994	39,408	41,514	55,075	49,949
Cebu.....	13,066	5,837	13,815	6,860	20,100	24,717	47,011	37,414
City of Baguio.....					36	17	36	17
Cotabato.....	1,107	549	2,624	1,370	7,431	5,074	11,162	6,973
Davao.....	1,283	446	3,093	1,378	10,311	6,873	14,687	8,697
Ilocos Norte.....	5,992	2,115	16,358	7,192	51,374	47,499	73,724	56,806
Ilocos Sur.....	3,852	1,579	6,560	2,825	7,044	5,819	17,456	10,258
Iloilo.....	10,136	2,463	19,259	6,312	40,006	37,068	69,401	45,843
Isabela.....	2,667	857	3,616	1,216	5,340	2,800	11,653	4,923
Laguna.....	5,347	3,786	7,580	5,322	28,861	40,567	41,788	49,675
Lanao.....	829	434	1,321	1,042	2,563	3,021	4,713	4,497
La Union.....	3,922	1,607	5,714	4,850	3,884	5,864	13,520	12,321
Leyte.....	7,962	2,342	23,488	5,664	47,102	27,975	78,552	35,981
Marinduque.....	1,016	342	742	312	3,304	3,823	5,062	4,477
Masbate.....	1,693	359	4,621	1,139	16,845	8,405	23,159	9,908
Mindoro.....	923	304	1,228	637	2,338	1,704	4,489	2,645
Misamis.....	3,304	1,184	4,890	2,055	7,532	4,608	15,726	7,847
Mountain Province.....	838	393	2,627	1,385	9,296	7,126	12,761	8,904
Nueva Ecija.....	8,483	2,663	15,405	5,449	28,893	18,576	52,781	26,688
Nueva Vizcaya.....	896	448	625	693	1,837	2,295	2,858	3,436
Occidental Negros.....	8,620	1,981	14,348	4,430	25,861	21,318	48,829	27,729
Oriental Negros.....	7,815	2,141	8,850	3,711	11,627	7,146	28,292	12,998
Palawan.....	96	76	275	219	1,437	1,766	1,808	2,061
Pampanga.....	4,745	2,276	3,463	1,817	909	1,076	9,117	5,169
Pangasinan.....	16,103	3,513	17,894	5,226	23,809	20,370	67,806	29,109
Rizal.....	4,577	2,011	2,250	1,935	6,111	8,235	12,938	12,181
Romblon.....	1,361	540	1,966	646	3,055	2,000	6,382	3,186
Samar.....	2,763	1,400	5,199	3,489	12,162	9,730	20,124	14,619
Sorsogon.....	3,846	1,202	8,769	2,510	29,142	13,479	41,757	17,191
Sulu.....	1,164	538	4,098	2,226	4,427	5,084	9,689	7,848
Surigao.....	818	298	1,590	777	4,099	2,968	6,507	4,043
Tarlac.....	2,684	1,129	4,862	2,701	5,470	8,289	13,016	12,119
Tayabas.....	6,318	3,200	8,713	3,546	12,215	8,759	27,246	15,605
Zambales.....	897	667	1,049	1,899	1,288	1,815	3,234	3,881
Zamboanga.....	1,189	758	2,737	1,773	3,852	3,389	7,778	5,920
Total.....	198,318	68,948	303,372	130,065	595,806	513,000	1,097,496	712,013

<sup>1</sup> Incomplete; reports from other provinces not yet received.

Vaccinations performed by vaccinating parties are included in the above table.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTIDYSENTERY VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928 <sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Abra.....	6,221	5,363		11,584
Agusan.....	4,671	2,240		6,911
Albay.....	7,108	4,795		11,903
Bataan.....	44			44
Batanes.....	37	19		56
Batangas.....	62	11		73
Bohol.....	3,500	2,531		6,031
Bukidnon.....	2,211	920		3,131
Bulacan.....	4,125	2,008		6,133
Cagayan.....	11,463	7,617		19,080
Camarines Norte.....	2,553	2,187		4,740
Camarines Sur.....	9,185	3,278		12,463
Capiz.....	32,717	23,412	909	57,038
Catanduanes.....	6,105	3,902		10,007
Cebu.....	15,033	9,013		24,046
City of Baguio.....	1,358	792		2,150
Iloilo.....	56,019	33,440		89,459
Isabela.....	5,505	2,782		8,287
Ilocos Norte.....	12,425	9,870		22,295
Laguna.....	13,809	9,801	62	23,672
La Union.....	31,293	26,670		57,963
Leyte.....	44	37		81
Masbate.....	884	212		1,096
Mindoro.....	5,364	3,415		8,779
Misamis.....	1,278	561		1,839
Mountain Province.....	7,177	3,778	56	11,011
Nueva Vizcaya.....	59	32	14	105
Occidental Negros.....	14,830	8,192	21	23,043
Oriental Negros.....	1,550	652		2,202
Palawan.....	91	81		172
Pampanga.....	3,849	1,232		5,081
Pangasinan.....	30,632	24,425	25	55,082
Rizal.....	11,586	3,640		15,226
Romblon.....	5,972	4,652		10,624
Samar.....	1,851	1,511		3,362
Sorsogon.....	615	139		754
Surigao.....	6,964	5,015	1	11,980
Tarlac.....	5,921	2,307	16	8,244
Tayabas.....	6,640	3,958		10,598
Zambales.....	42,996	35,481		79,477
Zamboanga.....	8,111	5,758		13,869
Total.....	381,858	256,729	1,104	639,691

<sup>1</sup> Incomplete; reports from other provinces not yet received.



**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTICHOLERA VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928**

Provinces	First injection	Second injection	Third injection	Total
Agusan.....	354	118		472
Albay.....	18,976	7,666	274	26,916
Antique.....	2,119	1,233		3,352
Bataan.....	16,218	1,435		17,713
Batanes.....	21	19		40
Batangas.....	2,398	542		2,940
Bulacan.....	181,004	1,277		182,281
Cagayan.....	6,822	728		7,550
Camarines Sur.....	28,674	1,052		29,726
Capiz.....	298	226		524
Catanduanes.....	854	347		1,201
Cebu.....	394	338	50	782
Iloilo.....	222	85		307
Isabela.....	240	322		562
Ilocos Norte.....	9,575	7,617	194	17,386
Laguna.....	4,070	971	108	5,149
Leyte.....	4,064	1,785		5,849
Mindoro.....	4,291	2,584		6,875
Nueva Ecija.....	285	99		384
Oriental Negros.....	166	62		228
Pampanga.....	4,281	340		4,621
Pangasinan.....	5,791	4,373	46	10,210
Rizal.....	148,128	17,354	69	165,551
Romblon.....	1,199	209		1,408
Samar.....	3,175	2,461	329	5,965
Sorsogon.....	43,124	1,146	3	44,273
Surigao.....	2,061	2,403		4,464
Tarlac.....	2,009	763		2,772
Zambales.....	606	425	425	1,456
Zamboanga.....	3,962	2,835		6,797
Total.....	495,421	60,835	1,498	557,754

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH ANTITYPHOID VACCINE  
RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928**

Provinces	First injection	Second injection	Third injection	Total
Albay.....	357	233	107	697
Bataan.....	51	51	51	153
Batangas.....	366	348	53	767
Bukidnon.....	157	82	31	270
Bulacan.....	7,139	4,351	2,732	14,222
Camarines Sur.....	5,029	2,663	130	7,822
Catanduanes.....	6	6	6	18
Iloilo.....		120		120
Laguna.....	8,033	5,310	2,571	15,914
La Union.....	343	293	539	1,175
Leyte.....	1,112	326	63	1,501
Mindoro.....	340	30		370
Mountain Province.....	223			223
Pampanga.....	2,450	937	26	3,413
Pangasinan.....	2,842	1,804	234	4,880
Rizal.....	3,675	1,434	303	5,412
Romblon.....	319	306		625
Sorsogon.....	1,504	226	10	1,740
Tarlac.....	5,760	2,403	219	8,382
Total.....	39,706	20,923	7,075	67,704

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**CONSOLIDATED REPORT OF VACCINATIONS WITH MIXED (TYPHOID AND CHOLERA) VACCINE RECEIVED FROM THE PROVINCES SINCE JANUARY, 1928<sup>1</sup>**

Provinces	First injection	Second injection	Third injection	Total
Abra.....	6,146	5,153	675	11,974
Agusan.....	3,768	2,215		5,983
Albay.....	289	54		343
Antique.....	3,287	1,820		5,107
Bataan.....	14,974	10,091		25,065
Batanes.....	754	706		1,460
Batangas.....	3,454	2,451	27	5,932
Bohol.....	5,066	3,852		8,918
Bukidnon.....	810	618	49	1,477
Bulacan.....	1,169	625		1,794
Cagayan.....	11,161	6,231		17,392
Camarines Norte.....	10,848	8,965	231	20,044
Camarines Sur.....	5,892	2,686	51	8,629
Capiz.....	5,018	2,548	124	7,690
Cavite.....	96,888	81,058		177,946
Cebu.....	32,316	10,519	501	43,336
City of Baguio.....	12	12		24
Cotabato.....	2,173	250	220	2,643
Davao.....	4,288	2,791		7,079
Ilocos Norte.....	9,653	5,146	994	15,793
Ilocos Sur.....	4,205	3,857	46	8,108
Iloilo.....	27,090	8,847		35,937
Isabela.....	10,817	7,593		18,410
Laguna.....	13,183	11,055	6,608	30,846
Lanao.....	14,563	6,432		20,995
La Union.....	12,739	8,986		21,725
Leyte.....	9,572	5,439		15,011
Marinduque.....	6,709	3,519		10,228
Masbate.....	4,877	2,181		7,008
Mindoro.....	3,476	1,540		5,016
Misamis.....	6,985	2,378	66	9,429
Mountain Province.....	4,080	1,516	682	6,278
Nueva Ecija.....	10,218	8,241		18,459
Nueva Vizcaya.....	3,060	2,614		5,674
Occidental Negros.....	21,530	12,152	1,858	35,540
Oriental Negros.....	8,630	4,331	3	12,964
Palawan.....	59	59		118
Pampanga.....	178,455	45,882		224,337
Pangasinan.....	18,295	13,527	97	31,919
Rizal.....	3,803	2,024		5,827
Samar.....	10,709	5,216	428	16,353
Sulu.....	30			30
Surigao.....	413	247		660
Tarlac.....	5,646	3,826	118	9,590
Tayabas.....	27,811	14,797		42,608
Zambales.....	12,306	7,693		19,999
Zamboanga.....	15,774	5,652		21,426
Total.....	653,001	337,345	12,778	1,003,124

<sup>1</sup> Incomplete; reports from other provinces not yet received.

**SMALLPOX REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF DECEMBER, 1928**

(No case and no death reported during the month)

**CHOLERA REPORTS FROM THE PROVINCES RECEIVED DURING THE MONTH OF DECEMBER, 1928**

(No case and no death reported during the month)

**REPORT OF THE DIVISION OF SANITARY ENGINEERING, CITY OF MANILA,  
DURING THE MONTH OF DECEMBER, 1928**

Sanitary orders	Health districts			Total
	No. 1 Meisic	No. 2 Sampaloc	No. 3 Paco	
<b>Orders pending, December 1, 1928:</b>				
Minor .....	125	108	261	494
Sewer .....	25	49	4	78
Vacating .....	7	8		15
Filling .....	25	46	29	100
<b>Total .....</b>	<b>182</b>	<b>211</b>	<b>294</b>	<b>687</b>
<b>Orders issued during the month:</b>				
Minor .....	11	14	1	26
Sewer .....			1	1
Vacating .....	1			1
Filling .....				
<b>Total .....</b>	<b>12</b>	<b>14</b>	<b>2</b>	<b>28</b>
<b>Orders completed during the month:</b>				
Minor .....	11	8	12	31
Sewer .....		3		3
Vacating .....				
Filling .....			4	4
<b>Total .....</b>	<b>11</b>	<b>11</b>	<b>16</b>	<b>38</b>
<b>Orders cancelled during the month:</b>				
Minor .....		1		1
Sewer .....				
Vacating .....				
Filling .....				
<b>Total .....</b>		<b>1</b>		<b>1</b>
<b>Orders pending December 31, 1928:</b>				
Minor .....	122	113	250	485
Sewer .....	25	46	5	76
Vacating .....	8	8		16
Filling .....	25	46	25	96
<b>Total .....</b>	<b>180</b>	<b>213</b>	<b>280</b>	<b>673</b>
<b>Strong material plans approved:</b>				
New buildings including additions and alteration .....	23	55	35	113
<b>Permits for minor building constructions:</b>				
Approved .....	23	56	30	109
Disapproved .....	10	7	8	25
<b>New buildings completed .....</b>	<b>12</b>	<b>20</b>	<b>14</b>	<b>46</b>
<b>Permits for light and mixed material constructions:</b>				
Approved .....	19	52	9	80
Disapproved .....	11	10	5	26
<b>Prosecutions:</b>				
Convictions .....				
Dismissals .....	8	2	1	11
Amount of fines .....				
<b>Plumbing permits issued .....</b>	<b>36</b>	<b>48</b>	<b>34</b>	<b>118</b>
<b>Plumbing projects completed .....</b>	<b>38</b>	<b>55</b>	<b>33</b>	<b>126</b>
<b>Premises connected to the sanitary sewer to November 30, 1928.</b>	<b>2,584</b>	<b>4,424</b>	<b>820</b>	<b>7,828</b>
<b>Connected during the month .....</b>	<b>3</b>	<b>8</b>	<b>3</b>	<b>14</b>
<b>Total .....</b>	<b>2,587</b>	<b>4,432</b>	<b>823</b>	<b>7,842</b>

Meisic includes Tondo, San Nicolas, and Binondo. Sampaloc includes Santa Cruz, Quiapo, and San Miguel. Paco includes Port Area, Intramuros, Ermita, Malate, Pandacan, and Santa Ana.



**MONTHLY BULLETIN**  
**OF THE**  
**PHILIPPINE HEALTH SERVICE**

**INDEX TO VOLUME VIII, JANUARY TO  
DECEMBER, 1928**

Administrative order:	Page
Sanitary conditions in public markets.....	406
Aftermath of a fiesta.....	400
Antidysentery vaccine in the control of bacillary dysentery outbreaks in the Province of Antique.....	636
Building the body healthy.....	240; 243
Cholera:	
Epidemic traced to water.....	123
Circular:	
Enforcement of street cleaning, Mindanao and Sulu.....	410
Inspection of spoiled canned foods.....	412
Preparation and submission of weekly, and annual reports.....	413
Common colds .....	708
Culion and its inmates:	
Bright side of Culion.....	231
Colony proper .....	231
Entertainments in Culion.....	233
Gifts of nature in the colony.....	232
Medical work .....	23b
Religious work .....	234
Disappearance of malaria parasites in the peripheral blood following the administration of Plasmochin compound.....	644
Eradication of leprosy .....	360
Fajardo describes Culion leper's life.....	707
First case of rhinosporidiosis reported in the Philippines.....	644
First progress report ending December 31, 1928, in the Cebu Leper Detention Camp, P. H. S. ....	689
Duration and type of leprosy on admission.....	691
Family history .....	690
Relation:	
Bacteriological examinations .....	679
Between amount of drugs used to improvement.....	695
Parole of negatives .....	697
Summary and conclusions .....	699
Result of treatment.....	692

	Page
Food preservation for the unfortunate lepers .....	415
Gaps that should be filled in .....	470
General statistics .....	29; 93; 149; 193; 247; 311; 363; 449; 471; 591; 659; 713
Germ enemies of the body .....	461
Health propaganda .....	402
Historical review of health activities in the Philippines .....	283
Hygiene of clothing, corsets, hats, shoes, and handkerchiefs .....	649
Influenza .....	709
<i>In memoriam:</i>	
Dr. Salvador Vivencio del Rosario .....	511
Intravenous use of mercurochrome at the Tayabas Provincial Hos- pital .....	453
Keeping the body healthy .....	236; 465; 466
Leprosy:	
Campaign in the Philippines .....	702
Situation in India .....	22
Work in the Province of Cebu .....	183
Malaria surveys and controls in Mindanao and Sulu .....	537
Bungao Island .....	575
Jolo Island .....	575
Siasi Island .....	573
Summary:	
Bukidnon .....	577
Lanao .....	577
Misamis .....	578
Sulu Province .....	578
Tawi-Tawi Island .....	573
Memorandum:	
Accident of Dr. Pedro J. Alvarado .....	449
Scientific article for the annual convention, Philippine Islands Medical Association .....	188
Miscellaneous .....	24; 90; 146; 191; 244; 246; 308; 361; 417; 478; 589; 656; 710
Mosquito:	
Diseases .....	189
Survey of public health laboratories .....	451
Mr. Business Man, have you taken your vacation .....	401
Noguchi memorial in Cincinnati .....	652
Overhauling and the prolongation of life:	
Adolescence .....	396
Early adult life .....	397
Infancy .....	393
Middle life .....	398
Plasmochin and quinine on the prophylaxis and on the prevention of relapse of malaria .....	128
Observations .....	130
Procedure and technic .....	129
Summary .....	134
Proclamation No. 198 .....	701

	<b>Page</b>
Public health activities in the Philippines.....	223
Industrial hygiene .....	229
Period of organization .....	224
Publicity .....	229
Scientific investigations .....	227
Structural sanitation .....	226
Questions and answers on leprosy .....	135
Prophylaxis .....	140
Symptomatology and diagnosis .....	137
Treatment .....	142
Reports:	
Committee of beriberi:	
Common diet of Filipino laboring class.....	531
Diagnosis of beriberi.....	528
Educational campaign, conference, letters, pamphlets .....	538
Introduction .....	514
Rice .....	515
Summary and recommendations.....	535
Tiki-tiki production .....	534
Typhoid situation in Manila during 1924.....	61
Method of control .....	75
Notification and diagnosis.....	64
Present status .....	63
Prevalence:	
Age and sex incidence .....	66
Occupation and nationality .....	67
Seasonal variation .....	67
Probable sources:	
Flies .....	72
Food and drinks .....	72
Sanitary condition .....	72
Sewage disposal .....	67
Value of investigating diarrheal diseases of possible case of cholera .....	704
Yaws campaign in the Province of Cotabato.....	341
Bone lesions .....	347
Diagnosis .....	348
Gummata .....	347
Kerotosis .....	347
Palmar and plantar form.....	346
Prevalence and contagion.....	344
Primary lesion .....	345
Result of treatment .....	349
Ring worm yaw .....	346
Secondary lesion .....	345
Summary and recommendation .....	350
Rôle of the nursing profession in the progress of the Philippines.....	351
Sanitation among plantation laborers.....	473
Sixteen rules of health.....	655
Superstitions and modern treatment in Moroland.....	18

<b>Survey of the progress of public health work in the Philippines during the last four years:</b>	<b>Page</b>
Finance .....	625
Health administration in the City of Manila.....	622
Health publicity .....	625
Leprosy work .....	626
Malaria control .....	625
Medical relief .....	627
Noteworthy health legislation .....	631
Organization and personnel.....	621
Other outstanding achievements .....	629
<b>Synopsis of San Lazaro Leprosarium:</b>	
Admission and parole .....	279
Daily visitors to the hospital.....	281
Free food and medical treatment .....	280
Leper activities .....	281
Leper school and church.....	281
<b>Tentative plan for school health program and organization in the Philippines:</b>	
Introduction .....	354
Our present system.....	354
Parents .....	357
Proposed plan .....	355
Pupils .....	357
School nurse .....	356
School teacher .....	356
Summary references .....	358
<b>Trachoma:</b>	
Campaign in Pangasinan .....	82
Value of present method of treating leprosy .....	87
<b>Ventilation:</b>	
Changes take place in the air and effects.....	8
Its purpose .....	5
Theories .....	5
Tropical environment .....	12
Usual practice .....	11
What do you do in hot season.....	15
<b>Work with unexpressed rewards.....</b>	<b>476</b>











UNIVERSITY OF MICHIGAN



3 9015 05448 8641

**BOUND**

NOV 16 1939

UNIV OF MICH.  
LIBRARY

